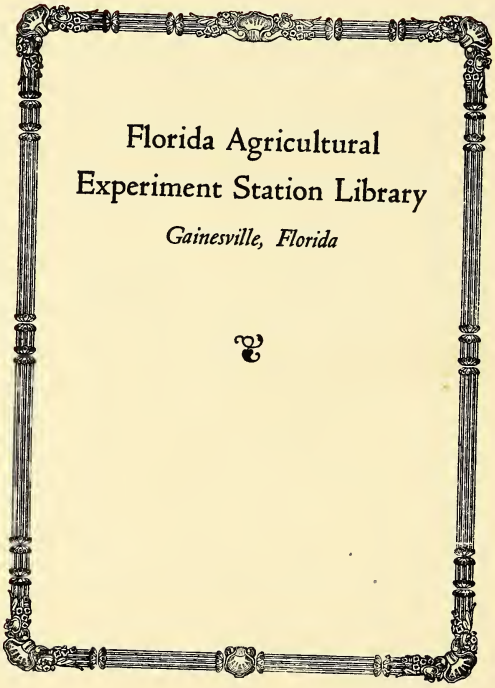

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THE STORY OF AGRICULTURAL ECONOMICS

The Farm Foundation of Chicago is proud to have sponsored and to present this historical treatment of agricultural economics by Henry C. and Anne Taylor. Their story of the men, the services and the ideas that have contributed so much to the growth and to the present status of our rural economy is a distinctive addition to the agricultural literature of our time. Its value to those pursuing studies in the field of economics will increase with the years.

The Story of
Agricultural Economics
in the United States, 1840-1932

MEN — SERVICES — IDEAS

Henry C. and Anne Dewees Taylor

Farm Finance Section **by Norman J. Wall**
Foreword **by Everett E. Edwards**
Indexed **by Adelaide R. Hasse**



The Iowa State College Press, Ames, Iowa

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To

Thomas Forsythe Hunt

who opened the door for agricultural

economics in the land-grant colleges

Agriculture
Bancroft
11-14-52

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Foreword

We have heard about the bird which flew backward to find where he had come from. Thanks to the capacities, patience, and judgment of the Taylors, practitioneers in the field of agricultural economics need not fly backward to see where they came from. This book is devoted to the conception, birth, and early development of a field of research, interpretation, and implementation which plays an important role in national welfare.

The scientific development of agricultural economics in the United States extends backward a scarce 50 years of conventional calendar time. Yet today agricultural economists are included in the teaching, research, and extension service staffs of all the land-grant colleges and universities, are found throughout the numerous and far-flung agencies of the U. S. Department of Agriculture, and are included on the staffs of many of the privately supported universities and research foundations and of the great trade concerns and corporations which pride themselves on being the embodiment of practical American business skill. Surely the question as to how agricultural economics reached this height in the United States is worth serious study.

Without endeavoring to answer the question as to the cause of this development over the last half century, it seems safe to say that anyone interested in an answer must in the future start with this volume which is literally a story of the birth of agricultural economics in the United States. No one is better qualified to outline this story than Henry C. Taylor — the first professor of agricultural economics in a land-grant institution, the author of the first American textbook dealing with the principles of agricultural economics, and the organizer and first Chief of the Bureau of Agricultural Economics in the U. S. Department of Agriculture. In addition to this intimate and first-hand knowledge of the field is the fact that the Taylors had at their command the time, the resources, and the skill to see that the task be adequately done. The story is not only interestingly told, it is well documented.

A study of the development of agricultural economics raises the question as to what came first in the development of this subject —

the fact, interpretation, or economic theory. Systematic fact-gathering activities in this field antedated by many decades the application of scientific methods of interpreting the facts and the statement of principles. It is true that the statistical work started in 1840 was based upon certain assumptions with regard to price determination, but those assumptions were not tested scientifically for three quarters of a century.

The project of writing the history of the development of agricultural economics owed much to the fact that the senior author has had a lifelong interest in history and the historical method as a medium of approach to the social sciences. I do not know when Clio won Taylor as a disciple. Certainly his association with Richard T. Ely and Frederick J. Turner at the University of Wisconsin in the 1890's stimulated that interest. His studies in the London School of Economics, and in the University of Berlin at the turn of the century, gave further emphasis to the importance of the historical approach to the problems of a dynamic agriculture. While in Europe, he tried his skill in the use of the method by searching for pertinent material and writing the history of the decline of landowning farmers in England and along with that the constructive work of the English in solving the problems of equitable relations between landlords and tenants.

In his pioneering in the teaching of agricultural economics at the University of Wisconsin, Taylor emphasized the historical method. He required his promising graduate students to familiarize themselves with the method — to go to the history department and take a seminar in research methods with W. L. Westerman or F. J. Turner. It was Taylor who emphasized both the historical and the geographical methods in the Bureau of Agricultural Economics, and from that day to this the Bureau has had a unit serving as a clearing-house on historical matters. But Taylor used other methods also. He was eclectic. He used the survey, accounting, and statistical techniques along with inductive and deductive analysis. Another of Taylor's qualifications came from his pioneer experience in the field of agricultural economics and his participation for fifty years in the historical development depicted in this book.

In 1939 the Bureau of Agricultural Economics in co-operation with the Office of the Under Secretary of Agriculture, M. L. Wilson, held a conference to evaluate the historical work done in the Department and draw up a prospectus for future research. H. C. Taylor participated in that conference, which resulted in the suggestion that the history unit of the Bureau of Agricultural Economics initiate a research project devoted to the history of agricultural economics. Anne Dewees was assigned to execute this new project for which she had special qualifications. Trained and experienced as a research librarian, she had the capacity to unearth and gather pertinent data

for the project. She was able to see, evaluate, and group ideas and facts in historical relation. She had also an appreciation of the importance of accuracy of quotation and of fact.

The joint effort of the Taylors has resulted in a work which should greatly enhance further progress in the development of agricultural economics. The story of the development of the subject supplies us a range of experiences of the past, widens our horizons and steadies our judgment.

EVERETT E. EDWARDS

History Section
Bureau of Agricultural Economics
Washington, D. C.
January, 1952

Preface

THIS BOOK IS CALLED *The Story of Agricultural Economics* rather than "the history," because it is a narrative less formal in presentation than standard historical works and because it includes much that is not economics but which relates to the character of those on the stage of action where economic services for farmers had their growth. Designed to stimulate the growth of wisdom as well as of knowledge, it tells of the ideas and acts of men who have tried to solve farmers' economic problems. It brings together material which should prove useful to those who carry on this work.

In the preparation of this book our imaginations have been kindled by the thought that the growth of agricultural economics will be continuous, that in the future as in the past, new ideas will give birth to experimentation in methods of fact gathering, of fact analysis, of information dissemination, and in the creation of institutions to serve the farmer. It is hoped that this chronicle of men, services, and ideas may help students and men of action to avoid repetition of mistakes and to garner the accumulated knowledge and wisdom made patent by those who in the past have sought to throw light on the pathway of the farmer.

The story as here told is based upon materials scattered through hundreds of unpublished letters and manuscripts and through thousands of books and pamphlets. Some of the material was available only in the memories of men. Most of the facts presented relate to the period from 1840 to 1933. Until the 1920's, the official view was that fair prices for farm products were attainable without artificial price supports and without government control of production. It was believed that with full information farmers would adjust their production and plan their marketing in a way that would result in supply-and-demand prices being *fair* prices. The farmer was not told what to do but was given facts as a basis for deciding for himself.

Information was more and more needed as the development of better transportation facilities led to the growth of world markets for major staples of agriculture and national markets for minor products. Farmers were in the dark not only with respect to the

demands of the distant markets but also with respect to production for those markets by other farmers in remote areas of the country or of the world.

It is ever-occurring change in the conditions with which he has to deal that creates the farmer's economic problems. It may be change with respect to available farm land, working force, or farm equipment, or it may be change in the numbers of people in other occupations depending upon farmers for food and raw materials or in the purchasing power of all consumers, that creates new conditions to which farmers must adjust their activities. It is with respect to changing conditions that information services for farmers become important.

For this reason agricultural information services were initiated by the government long before agricultural economics was developed in the educational institutions. The first agricultural census taken in 1840, and the crop-estimating service of the U. S. Patent Office, commencing with the crop of 1841, were the beginnings of economic services in response to the needs of farmers who sold their products in distant markets. With the growth of the nation the information services were enlarged to meet the growing needs of farmers, merchants, and consumers. It was in the development of these services that agricultural economics had its early growth.

While agricultural economic ideas and fact-gathering services were in evidence by 1840, the first record we have found of interest in these matters in United States universities was in the late 1860's — at Illinois and Cornell. It was toward the end of the first decade of the twentieth century that the universities began to employ men to give their full time to this subject. From that time on, the place of economics in agricultural education and research was gradually recognized by the agricultural colleges and experiment stations. The growth that followed World War I was phenomenal.

In telling of the origin and growth of ideas and of the development of agencies for making them effective, it has seemed proper to keep together the record of the man, of his thought, and of his acts with the hope that the occasion of the birth and growth of ideas and activities may become apparent. Furthermore, in this narrative, the effort has been, so far as practicable, to have the writers of the period tell the story, in order that the reader may have direct access to source material not otherwise readily available. Most quotations are indicated by the size of type. Square brackets within quotations indicate material interpolated. We have taken two liberties with quoted material: Headings within quotations have been centered to differentiate them from side headings used by the authors of this book, and in compliance with the established practice of the Iowa State College Press the word *Negro* has been given an initial capital in all cases. Each statement quoted is presented as someone's effort to contribute to the growth of knowledge. The aim has been to

present characteristic statements and in general to leave evaluation of the contributions to the reader. Value may be measured in terms of the extent to which the contributions clarify an idea or stimulate new thought. We hope the reader will keep in mind the fact that no idea is perfect for every place and time, that nothing is finished, everything is in process of becoming.

Nevertheless the thinking, the ideas, and the institutions created at each stage in the progress of man, if aimed at the betterment of mankind, are worth studying as a stimulus and as a guide to further thinking, more advanced ideas, more intelligent action, and the creation of more useful institutions which may serve in their time and become the basis of still further progress. It should not be overlooked, however, that while old things and forms pass away and new things and forms take their places for a time and then in turn pass away to give place to new, a certain essence of purpose, of dynamic, threads through the past, the present, and the future as projected in our imaginations, and that this essence is refined and clarified with the progress of learning through striving to attain ever advancing goals.

In the later years of the period here considered, the low prices of farm products, when compared with the prices of the things farmers buy, led many people to doubt whether, even with full information available to all, the supply-demand price would be a fair price for farm products. The National Agricultural Conference of 1922 approved a committee report which stated: ". . . the Congress and the President of the United States should take such steps as will immediately reestablish a fair exchange value for all farm products with that of all other commodities."[1] The term "parity" which soon came into use as a short expression for this idea was used in *Wallaces' Farmer* January 20 and December 1, 1922.

The U. S. Department of Agriculture made special studies of the purchasing power of farm products at various dates and published index numbers each month which showed the relation between the prices of farm products and of the things farmers buy. With the fact established that the farmers were not getting a fair share of the national income, organized farmers brought pressure to bear upon Congress for remedial legislation. Ultimately this resulted in a new federal farm policy, with price supports for farm products as a major feature. That change in policy did not come easily. A full decade was required to get a bill through Congress and signed by the President which aimed definitely at maintaining parity prices for farm products.

The new policy did not make obsolete the results of previous work in this field. The same problems have to be faced, and the same questions answered, whether the responsibility and the risks

[1] U. S. Congress, *Report of the National Agricultural Conference,* 67th Congress, 2nd Session, *House Document* 195 (Washington, 1922), p. 171.

are all carried by the farmer or in some measure taken over by the government. The production and marketing information required to direct the economy is still needed. The financial and land tenure problems still exist. The agencies developed prior to 1933 constitute the foundation on which the programs and the agencies of a new era are being built.

Work on this book was commenced more than a dozen years ago. On January 30, 1939, the senior author, then Managing Director of the Farm Foundation in Chicago, wrote to O. C. Stine, then Chief of the Division of Statistical and Historical Research, U. S. Department of Agriculture: "Two incidents have led me to feel that I should begin to get together material which will enable me to write something of the history of agricultural economics in this country. . . ." Stine replied on February 3 wholeheartedly encouraging the undertaking. He also offered the co-operation of his Division and on May 24, following a conference in the Office of the Under Secretary of Agriculture which proposed the initiation of a research project on the history of agricultural economics, Stine called Everett E. Edwards, Arthur G. Peterson, Mary G. Lacy, and Anne Dewees to his office to discuss the project with H. C. Taylor and to make suggestions concerning ways and means of collecting materials needed for the project.

As a part of the fact gathering and the gaining of perspective for the undertaking, Anne Dewees was sent by Stine in 1939–1941 to interview those concerned with the subject in sixteen institutions where research and teaching in the field of agricultural economics were being carried on, to visit the libraries and to consult the librarians about materials available in those institutions, and to interview certain other key persons interested in the subject. To supplement materials secured through interviews, correspondence was carried on with many persons. The records of those interviews and the letters received, helped greatly in formulating plans for the detailed study of the documents which contain the accumulated records of the work in agricultural economics prior to 1933.

Thus some 200 persons contributed in varying degrees to the character of this book. The authors would make note of the specific contribution of each person if that were practicable or even humanly possible. Obviously it is not, for who can measure the growth of thought resulting from a suggestion or weigh the improvement in methods of presentation deriving from a wisely critical comment? Therefore it must suffice to say that the authors are keenly aware of their debts and are deeply grateful for every help given to them.

From 1941 to 1945 the authors continued to gather material for this book, but when it became evident that their full time would be required on this project if the manuscript was to be completed, the senior author resigned, in 1945, from the position of Managing Director of the Farm Foundation and, with the sponsorship of that

Foundation, devoted full time for the next four years, along with the junior author and an able assistant, Alice Russell, to the preparation of the manuscript. The Library of Congress co-operated by providing working space in study rooms and by bringing there the more than 3,000 volumes examined. Luther Evans, the Librarian, was generous and understanding. The United States Department of Agriculture co-operated by making available such material as had been accumulated on the subject and by responding generously to every request for help. The Department's librarians were always sympathetic and helpful. Experts from the Department assisted in the preparation of nearly every part of the book by providing material from their files, by reading the first draft of the manuscript, and by making helpful suggestions.

Everett E. Edwards rendered signal bibliographic help. Joseph A. Becker gave material assistance in the preparation of the section on crop and livestock estimates. S. W. Mendum co-operated in preparing the sections on farm surveys, farm accounting, and cost of production and read critically the entire manuscript. Louis H. Bean helped prepare the statement regarding the use of multiple correlation in the study of price trends and outlook. The preparation of *Part Eight,* "Farm Finance," by Norman J. Wall, was a major contribution. Others of the U. S. Department of Agriculture who gave aid and counsel are: W. F. Callendar and several members of his staff, A. P. Chew, F. F. Elliott, S. E. Johnson, V. W. Johnson, Mary G. Lacy, Caroline B. Sherman, O. C. Stine and O. V. Wells. G. W. Forster and F. D. Farrell read parts of the manuscript, assisted in planning the presentation and gave valuable editorial assistance. The competent assistance of Alice Russell in the preparation of the manuscript was invaluable. The painstaking work of Audrey Ames Cook, Margaret Dewees, and Agnes Dewees Stoertz, who assisted in checking quotations and source citations and reading the proof, contributed greatly to accuracy.

The authors feel, and desire to express, a warm sense of gratitude to each of those who helped in the preparation of this book. Especial credit is due the officials and the personnel of the Library of Congress who rendered countless services which greatly facilitated the work. The authors wish to express also their keen appreciation of the invaluable assistance rendered by the officials and members of the staff of the United States Department of Agriculture. The debt to the Board of Trustees and Directors Frank W. Peck and Joseph Ackerman of the Farm Foundation for financial support, sympathetic understanding, and wise counsel is beyond measure.

H. C. and Anne Taylor

Indian-Queen-on-the-Potomac
Washington 20, D.C.
May, 1952

Table of Contents

Foreword vii
Preface xi

PART ONE

ECONOMIC THINKING AROUSED BY THE AGRICULTURAL DEPRESSION OF THE 1890'S

1. Farmers' Search for Remedies 3
Farmers' Alliances 1889–1892 4
Transportation 5
Taxation 5
Land Settlement 5
Prices and Dealing in Futures 6
The Sub-treasury Plan and the Currency Issue 6
The National Grange, 1889–1897 8
The Currency Issue 8
Sub-treasury Plan 11
David Lubin's Subsidy Plans 12

2. Congressional Investigations and Reports 19
The Peffer Report, 1894 19
The Agricultural Situation 20
Railroads 21
Milling and Packing Industries 21
Money Power 21
Grain Prices 21
Options and Futures 22
Livestock Prices 23
Remedies Through Individual Action 23
Remedies Through Collective Action 24
The George Report, 1895 26
Cotton Agriculture Unsatisfactory 26
Causes of Low Prices 26
The Remonetization of Silver 27
Diversification 28
Implications of the Two Reports 28

3. Expressions of Economists 30
George K. Holmes 30
David A. Wells 31
American Economic Association Meeting of 1892 32
Charles S. Walker 35

James H. Canfield 36
William G. Sumner 37
J. Laurence Laughlin 37
American Economic Association Meeting of 1896 39
Lubin Prize Essays, 1896–1897 45
Relative Well-Being of Farmers 45
Causes of Depression 46
Lower Prices and Profits 47
Causes Not Measurable 48

PART TWO
EARLY DEVELOPMENT OF AGRICULTURAL ECONOMICS IN COLLEGES OF AGRICULTURE

4. Gregory, of Illinois, to Bailey, of Cornell **53**
John Milton Gregory 55
George E. Morrow 58
Eugene Davenport 60
Thomas F. Hunt 60
George T. Fairchild 71
Isaac P. Roberts 74
Frank A. Fetter 75
Willet M. Hays 75
William A. Scott 77
Liberty Hyde Bailey 78

5. Agricultural Economics Finding Itself **80**
The Pioneers 80
Meetings of American Economic Association, 1907, 1908 . . 82
Graduate School of Agriculture, 1908 and 1910 Sessions . . . 83
American Farm Management Association Organized . . . 84
Findings Challenged 86
Thomas F. Hunt Report 90
Concepts Gradually Clarified 96

PART THREE
ECONOMIC ANALYSIS OF FARM MANAGEMENT PROBLEMS

6. Choice of a Farm **101**
Henry C. Taylor 101
Land Valuation 102
Present Wants Estimated Highly 103
Competition Causes Rise in Rent 103
Speculation 104
Thomas F. Hunt 104
Personal Considerations 106
The Farm as a Home 107
Fred W. Card 110
George F. Warren 111
E. H. Thomson 111
F. F. Elliott 111

7. Choice of Farm Enterprises 112
Francis A. Walker 112
William H. Brewer 113
Henry C. Taylor 115
Thomas Nixon Carver 119
George F. Warren 119
Application of the Principles 120

8. Intensity of Culture 122
Washington and Jefferson 122
Census of 1860 123
William H. Brewer 124
The Classical View 125
Henry C. Taylor 126
Thomas Nixon Carver 129
Limitations of Both Theories 131
George F. Warren 135
Benjamin H. Hibbard 137
Tolley, Black, and Ezekiel 138
William J. Spillman 140
Ezekiel, McNall, and Morrison 141

9. Size of Farms 143
Henry C. Taylor 143
The Principle To Follow 144
Thomas F. Hunt 146
George F. Warren 147
Thomas Nixon Carver 150
Advantages and Disadvantages 151
Supreme Advantage 151
William J. Spillman 151
John D. Black 152
C. L. Holmes 153

10. Variations in Production Factors 154
Rogers and Walker 154
Henry C. Taylor 155
Capacity 157
Efficiency 157
Choice of Grades of Factors 158
E. C. Higbie 159
A Minnesota Study 161
Conclusion 163
Further Study Needed 164

11. The National Viewpoint 165
National Policy 165

PART FOUR

FACT GATHERING AND FURTHER STUDY OF FARM MANAGEMENT AND AGRICULTURAL ADJUSTMENTS

12. Crop and Livestock Estimates 169
Beginnings of Crop Estimating 169
Unofficial Efforts of Orange Judd, 1862 176

U. S. Department of Agriculture, 1863 179
Jacob R. Dodge, Statistician, 1866–1893 183
The National Board of Trade Shows an Interest 199
H. A. Robinson, Crop Estimator 205
John Hyde, Statistician, 1897–1905 208
1905 Cotton Acreage Estimates Challenged 217
The Keep Commission 220
Willet M. Hays in Charge of the Bureau of Statistics . . . 225
Crop Reporting Board Established, 1905 226
Victor Olmsted, Statistician, 1906–1913 227
Estabrook and Murray, 1913–1922 230
Condition Reports 235
Trained Field Agents 236
Edwin T. Meredith 237
Estimates Benefit Farmers 237
Help Stabilize Prices 238
Crop Estimates, Bureau of Agricultural Economics 239
Intentions To Plant 242
Yield Inquiries 243
Livestock Estimates 246
Milk and Egg Estimates 251
Changes in Procedures and in Organization 252
The International Institute of Agriculture 254

13. The Census of Agriculture **258**

The Reports for 1840, 1850, 1860, and 1870 258
The Report for 1880, Walker and Dodge 260
Farm Management Uses of Census Data 264
The Census of 1890, John Hyde 265
The Census of 1900, L. G. Powers 267
Investigation by National Board of Trade 268
Degree of Accuracy 269
Suggested Improvements 269
The Census of 1910, E. Dana Durand 270
The Census Reports for 1920, 1925, and 1930 274

14. Historical and Geographical Approach **277**

Importance of Historical View 277
Study of Economic Forces 278
Geographic Factors 279
Historical Studies of Industries 281
Regional Economic History 281
Poore and Flint 282
Francis A. Walker 284
William H. Brewer 284
Frederick Jackson Turner 285
Agricultural History Stimulated by the University of Wisconsin 287
M. B. Hammond — Cotton Industry 287
Henry C. Taylor — Landowning Farmers 289
Benjamin H. Hibbard — Agriculture in Dane County . . 290
John G. Thompson — Wheat in Wisconsin 292
Joseph Schafer — Agriculture in Wisconsin 294
John Lee Coulter — Agriculture in Minnesota and North Dakota 297
Robert Preston Brooks — Agriculture in Georgia . . . 299

Carnegie Funds Help 302
Falconer and Bidwell — Northern Agriculture 304
Progress Retarded 307
L. C. Gray — Southern Agriculture 310
Ulrich B. Phillips — Plantation Economics 313
Historical-Geographical Work in Washington 315
Baker and Stine 316
The Yearbooks for 1921–1925 317
Historical Setting for Farm Management Surveys . . . 319
The Wheat Situation of 1923 321
Everett E. Edwards — American Agriculture 321
Ulysses P. Hedrick — New York Agriculture 323

15. Agricultural Surveys **326**

Types of surveys 326
British Agricultural Surveys 327
Arthur Young's Tours 327
William Marshall's Surveys 330
Young and Marshall Contrasted 331
Influenced Albrecht Thaer 332
James Caird's Survey, 1850–51 333
James Macdonald 334
Royal Commissions of 1879 and 1893 335
Comments on British Surveys 336
Surveys in the United States Prior to 1908 337
Jared Eliot 338
George Washington 340
Edmund Ruffin 342
Frederick Law Olmsted 345
Solon Robinson 346
The Census as a Survey 347
Early Survey Work by Liberty Hyde Bailey 347
Taylor's Tours and Surveys 350
Thomas Nixon Carver 351
Bailey and the Country Life Commission 353
The Cornell Type of Farm Management Survey 356
Thomas F. Hunt at Cornell 356
Warren Takes Over Hunt's Project 358
U. S. Department of Agriculture Farm Management Surveys . . 366
Soil Types as a Factor 375
The Survey in Farm Management Extension 376
Liberty Hyde Bailey's Survey 382
Survey of Rural Vermont 383
An Appraisal of Survey Methods 384

16. Cost Accounting Studies **388**

Early Experiments in Cost Finding 388
Cost Accounting at Minnesota 394
Cost Accounting, Ohio 400
Illinois Introduced the Minnesota System 402
Wisconsin Introduced a Point of View 403
Cost Accounting at Cornell 411
Cost Accounting at Minnesota (Continued) 415
Office of Farm Management Participation 420

Conference in Chicago, 1923 428
Combining Cost Studies With Price Studies 432
Input-Output Study 442

17. The Outlook Approach in Production Adjustments 447
Agricultural Outlook Conferences 449
Dissemination of Outlook Information 451
Outlook Research 453
Intentions To Plant 453
Price Outlook Studies 454
Local Production Adjustment Studies 459
State and Regional Adjustment Studies 467
Appraisal of Outlook Studies 477

PART FIVE
MARKETING FARM PRODUCTS

18. Prices of Agricultural Products 483
U. S. Department of Agriculture Price Reporting 483
J. A. Everitt and the American Society of Equity 487
Prices Studied at University of Wisconsin 488
Prices Studied by Warren at Cornell 490
F. A. Pearson at Illinois — Milk Prices 494
Wallace's Ratio Method of Price Determination 494
Government Price Fixing 497
J. I. Falconer of Ohio 499
E. C. Young and O. A. Day of Indiana 500
G. S. Shepherd of Iowa State College 501
Bureau of Agricultural Economics Price Studies 503
Purchasing Power of Farm Products 505
Share of Agriculture in the National Income 507
The Struggle for Price Supports 509

19. Government Marketing Activities, 1893–1920 510
U. S. Department of Agriculture, 1893–1903 510
U. S. Industrial Commission of 1898 516
Division of Foreign Markets Expanded 524
Congress Interested 526
Marketing Work Planned 534
The Bureau of Markets 542

20. Marketing Work in Agricultural Colleges Prior to 1921 547
Illinois 547
Minnesota 549
Wisconsin 550
Massachusetts 563
Kentucky 564
Kansas 565

21. Miscellaneous Contributions Prior to 1922 567
American Academy of Political and Social Science 568
Joint Commission of Agricultural Inquiry, 1921 571
National Agricultural Conference, 1922 576
Aftermath of Conference of 1922 583

22. Wallace's Search for Remedies for Low Prices **591**

23. Marketing Services of the U. S. Department of Agriculture, 1921–32 **601**

The Economic Work Consolidated 602
Administration of Grain Standards 606
Administration of Cotton Futures Act 614
Universal Standards for American Cotton 618
Development of Wool Standards 631
Market News Service 633
Fruit and Vegetable Inspection 636

24. Co-operative Marketing Studies **641**

U. S. Department of Agriculture 641
Minnesota 653
Wisconsin 659
Ohio 663
New York — Cornell University 667
Iowa 672
Kentucky 678
California 686
Missouri 700
Michigan 703
American Institute of Co-operation 705
Co-operation and Prices — Clyde King 708

25. Marketing Research, 1921–1932 **710**

Bureau of Agricultural Economics 713
Kentucky 719
Kansas 723
Massachusetts 726
Minnesota 730
New York — Cornell University 733
Illinois 737
Michigan 744
Pennsylvania 747
Indiana 752
California 753
Ohio 755
Texas 758
Virginia 761
Missouri 763
National Association of State Marketing Officials 764

PART SIX
LAND ECONOMICS

26. Farm Ownership and Tenancy **769**

Tenancy and Farm Ownership in the United States 769
Decline of Landowning Farms in England 780
Relations of Landlords and Tenants in Great Britain . . . 782
Ricardo's Theory of Rent 786

Discussion of Land Tenure in the Agricultural Press . . . 787
The Wisconsin Farmer, 1856 788
Country Gentleman, 1860 789
Wallaces' Farmer, 1900–1905 796
Wisconsin Field Studies of Landlord and Tenant Relations, 1906–1907 804
Cornell Field Studies in Land Tenure 807
United States Office of Farm Management Tenure Surveys . . 808
Iowa Farm Leases Surveyed 811
Minnesota Studied Farm Leases 813
Benjamin H. Hibbard on Land Values and Land Tenure . . 817
The Agricultural Ladder 820
The Older Farmers in Retreat 826
G. S. Wehrwein on Farm Tenures 828

27. Irrigation Economics **830**

Economics of Irrigation, by R. T. Ely, 1904 830
Farm Management and Water Utilization, by Henry C. Taylor 837
Growth of Irrigation Institutions, by R. P. Teele 840

28. New Agencies and New Trends **848**

29. Public Interest in the Land **856**

Revolution in Land Policy, 1870–1891 856
The Economists and Land Policies 857
The Conservation Era, 1891–1921 859
Concepts of Land Economics 860
Land Utilization 862
Land Settlement 865
In Retrospect 869

PART SEVEN

FARM LABOR AND FARM WAGES

30. Farm Wages Reports **873**

1845 — U. S. Commissioner of Patents, Edmund Burke . . . 873
1866–1893 — Statistician U. S. Department of Agriculture, J. S. Dodge 873
1866–1909 — U. S. Department of Agriculture Reports . . . 880

31. Contributions and Studies by State Agencies **883**

New Jersey 883
Kansas 884
New York 885
Wisconsin 886
Minnesota 887
Ohio 889
California 889

32. Farm Labor Studies by the U. S. Department of Agriculture **891**

Massachusetts 891
New Jersey 892
Farm Labor Costs 894
Transient Labor in the Wheat Belt 895

PART EIGHT

FARM FINANCE—by Norman J. Wall

33. Agricultural Credit 899

Early Colonial Credit Problems 899
Credit in the Disposal of Public Lands 901
The Spread of Free Banking 902
Pre-Civil War Financing of Southern Agriculture 903
Early Farm Organization Views on Finance 905
Western Expansion Brings Financial Problems to East . . . 907
State Statistical Bureau Credit Studies 909
Indiana 909
Illinois 910
Nebraska 910
Michigan 911
Connecticut 912
New Jersey 912
Massachusetts 914
Wisconsin 914
Minnesota 914
Federal Enumeration of Farm-Mortgage–Debt Statistics . . . 916
The Agitation for Federal Rural Credits Legislation . . . 919
The Beginning of Seed Loans 921
Early Credit Research of the U. S. Department of Agriculture . 922
Early Credit Studies by States and Others 929
North Dakota 929
Wisconsin 930
Texas 935
Postwar Credit Studies 938
Co-operative Credit Associations 938
Availability of Farm Credit 939
Improvement in Farm-Mortgage–Debt Estimates . . . 941
Financing Tobacco 941
Net Worth of Farmers 942
Financing Cotton 943
An Over-all Picture of the Farm-Credit Situation . . . 944
Analysis of the Farm-Mortgage–Debt Situation 946
The Federal Intermediate Credit Banks 947
State and Other Postwar Credit Studies 953
North Carolina 953
New York 954
North Dakota 956
Regional Variations in Farm-Mortgage Interest Rates . . 956
Area Credit Surveys 957
Changes in Federal Farm Loan Act 958
Iowa 960
Ohio 962
Social Science Research Council on Credit Study . . . 963
Loaning Operations of a Federal Land Bank 964
Minnesota 966
South Dakota 967
Country Bank Failures and Farm Credit 968
Emergency Short-Term–Credit Facilities 974

34. Agricultural Insurance **976**

Fire Insurance 976
Crop Insurance 983
Other Types of Insurance 988
Scope and Methods of Research 990

35. Farm Taxation and Local Government **991**

Early Farm Organization Views on Taxation 993
First U. S. Department of Agriculture Tax Study 994
Double Taxation and the Progressive Land Tax 996
New Interest in Tax Problems After 1920 996
Federal Research on Tax Problems 1000
State Taxation Research 1004
Kansas 1004
Texas 1008
New York 1008
Wisconsin 1013
Michigan 1015
North Carolina 1015
Homestead Tax Exemption 1016
Tax Delinquency 1017
Public Finance in Relation to Agriculture — Scope and Method 1019

Author's Note **1021**

Index **1023**

PART ONE

ECONOMIC THINKING AROUSED BY THE AGRICULTURAL DEPRESSION OF THE 1890's

1.

Farmers' Search for Remedies

THE AGRICULTURAL SITUATION in the 1880's and the 1890's aroused much thought on the part of farmers, congressmen, and economists. Extension of the railroads through the fertile prairies of the North Central States and the improvement of farm machinery had led to a vast increase in wheat production. Expansion of the corn area and utilization of the native grasses had resulted in a rapid increase in hog and cattle production. Eastern markets were flooded with wheat, pork, and beef at prices that were embarrassing not only to farmers of the West but also to farmers of Ohio, New York, Pennsylvania, and New England.

The price-depressing influence of that rapid expansion of production was enhanced by a concurrent deflation of the currency, and finally by a depression in the city industries in 1893. Prices fell to very low levels; debt paying was all but impossible; mortgage foreclosures were common.

Continued low prices led farmers, and especially farmer-leaders, to promote the idea that government action was essential to the solution of the then critical problems of agriculture. Many measures involving government intervention were proposed and cast aside in the 1890's, most of which were effectuated in more or less modified form within the following half century. These measures included:

1. Government action to provide farm credit at lower rates of interest.
2. A flexible currency that would automatically expand or contract according to the need.
3. Inflation of the currency as a means of raising prices.
4. A federal income tax.
5. Control of railroad rates.
6. Regulation of future trading.
7. Regulation of the meat-packing industry.
8. Federal commodity loans on durable farm products in storage.

9. Price maintenance above the world market level by means of subsidies from the federal treasury.
10. Better information and crop reporting service.
11. Adjustment of agricultural production through individual effort.

The atmosphere created by the conditions, the ideas, and the activities of the 1890's made a lasting impression on the young men who became pioneers in the development of agricultural economics in the agricultural colleges.

Farmers' Alliances 1889-1892

The most active and outspoken of the farm organizations of the 1890's was the Farmers' Alliance. On April 22, 1890, L. L. Polk,[1] president of the National Farmers' Alliance and Industrial Union (addressing the United States Senate Committee on Agriculture and Forestry), claimed that the depressed condition was not due to the indolence of the farmer nor to overproduction but rather to "under-consumption." He brought forth the argument that if all poor people in the United States had a full diet there would be no wheat available for export. He claimed that the purchasing power of the dollar had become greater and greater due to scarcity of currency, but that when it came to paying debts and taxes, doctor bills and lawyer fees, the purchasing power of the dollar had not increased. Polk was extremely oratorical in his presentation of the situation:

> From all sections of this magnificent country comes the universal wail of hard times and distress. The farmer sows in faith, he toils in hope, but reaps in disappointment and despair. . . .
>
> We protest, with all reverence, that it is not God's fault. We protest that it is not the farmers' fault. We believe, and so charge, solemnly and deliberately, that it is the fault of the financial system of the Government — a system that has placed on agriculture an undue, unjust, and intolerable proportion of the burthens of taxation, while it makes that great interest the helpless victim of the rapacious greed and tyrannical power of gold. A system through which, despite the admonitions of history and the experience of all countries in all ages; despite the teachings and warnings of the ablest men in the science of political economy in this and in all countries, our currency has been contracted to a volume totally inadequate to the necessities of the people and the demands of trade, and with the natural and inevitable result — high-priced money and low-priced products.[2]

No farmers' organization of that period was more active in describing the farmer's plight or in suggesting remedies for his economic problems than was the Farmers' Alliance — both the Northern and the

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[1] For a vivid picture of L. L. Polk and his life work see: S. Noblin, *Leonidas LaFayette Polk, Agrarian Crusader,* (Chapel Hill: University of North Carolina Press, 1949).

[2] L. L. Polk, *Agricultural Depression: Its Causes — The Remedy* (Raleigh: Edwards and Broughton, 1890), pp. 24, 26.

Southern.[3] This is evident from reports, resolutions, and pronouncements issued by meetings held in 1889, 1890, 1891, and 1892.

Ideas which the farmers of the South and West desired to make effective through federal and state legislation were formulated at Alliance conventions held in St. Louis in December 1889. These were restated and somewhat revised at Ocala, Florida, in December 1890, and again were endorsed with slight modifications in the Cincinnati platform of the convention known officially as the "National Union Conference"[4] held in May 1891. Among the ideas sponsored were changes and reforms relating to transportation, taxation, land settlement, and — most important of all — proposals intended to solve the price problem.

TRANSPORTATION

At the St. Louis meeting in December 1889 the Alliance demanded "that the means of communication and transportation shall be owned by and operated in the interest of the people as is the United States postal system."[5] But at Ocala and at Cincinnati the resolution was modified to read as follows:

> We demand the most rigid, honest, and just State and national governmental control and supervision of the means of public communication and transportation, and if this control and supervision does not remove the abuse now existing, we demand the government ownership of such means of communication and transportation.[6]

TAXATION

Taxation also came under the critical eyes of farmer-leaders. The Alliance went on record as favoring radical changes in the national tax structure, emphasizing the doctrine of "equal rights to all and special privileges to none," as a desirable and necessary tenet of taxation. They demanded "a just and equitable system of graduated tax on incomes," and "that all national and State revenues shall be limited to the necessary expenses of the Government economically and honestly administered." Finally tariffs must be removed "from the necessities of life, that the poor of our land must have."[7]

LAND SETTLEMENT

The Alliances persistently insisted on having more land made available for actual settlers. A resolution to this effect was:

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[3] See J. D. Hicks, *The Populist Revolt* (Minneapolis: University of Minnesota Press, 1931), pp. 96-152, 427-44, for a discussion of Farmers' Alliances, relation of the Northern Alliance and the Southern Alliance, and demands and platforms of the years 1889-92.

[4] At this convention "Members of the Farmers' Alliances were clearly more numerous than members of any other orders, but it was evident that many of the delegates were 'joiners' who belonged to several orders. . . . Altogether more than fourteen hundred delegates were recognized, representing some thirty-three states and territories." See Hicks, *Revolt,* pp. 212-13.

[5] *National Economist,* 2:215 (Dec. 21, 1889).

[6] National Farmers' Alliance and Industrial Union, *Proceedings of the Annual Session of the Supreme Council,* Ocala, Florida, 1890 (Washington, 1891), p. 33. See also *National Economist,* 5:162 (May 30, 1891).

[7] Farmers' Alliance, *Proceedings,* 1890, p. 33.

That we demand the passage of laws prohibiting alien ownership of land, and that Congress take prompt action to devise some plan to obtain all lands now owned by aliens and foreign syndicates; and that all lands now held by railroad and other corporations in excess of such as is actually used and needed by them, be reclaimed by the Government and held for actual settlers only.[8]

This is further evidence that the Alliances were overlooking the fact that an overexpanded agriculture was one cause of the low prices from which they were suffering, and that they were advocating a policy that might result in a further expansion of agricultural output.

PRICES AND DEALING IN FUTURES

Major attention of the Alliance in that period was given to efforts to raise prices of farm products. Leaders of the Alliance movement believed that dealing in futures depressed prices of farm products. In 1889 and again in 1890 they voted to

. . . demand that Congress shall pass such laws as shall effectually prevent the dealing in futures of all agricultural and mechanical productions; providing a stringent system of procedure in trials as shall secure the prompt conviction, and imposing such penalties as shall secure the most perfect compliance with the law.[9]

THE SUB-TREASURY PLAN AND THE CURRENCY ISSUE

Noblin's study of this period states:

The first suggestion of the sub-treasury plan seems to have come from Harry Skinner, a rising young lawyer and politician of eastern North Carolina. In *Frank Leslie's Illustrated Newspaper* for November 30, 1889, appeared an article by Skinner entitled "The Hope of the South," which grew out of a much earlier essay of his called "A Landed Basis for Our National Bank Issue."

Precisely one week after the publication date of Skinner's article the sub-treasury plan of the Farmers' Alliance was officially announced at St. Louis. On December 7, 1889, at the final session of the convention, it was presented to the delegates by a "committee on the monetary system" consisting of Charles W. Macune and H. S. P. Ashby of Texas, L. L. Polk of North Carolina, Leonidas F. Livingston of Georgia, and W. Scott Morgan of Arkansas. The committee report seemed to indicate clearly the influence of Skinner's ideas, but to just as great an extent it bore the unmistakable stamp of Macune.[10]

In addition to advocating free and unlimited coinage of silver as a means of expanding the currency, the Alliance proposed the sub-treasury plan as a means of providing variations in the supply of money to correspond to seasonal needs and at the same time provide farmers with loans on staples in storage at a low rate of interest.

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[8] Farmers' Alliance, *Proceedings,* 1890, p. 33.

[9] Farmers' Alliance, *Proceedings,* 1890, p. 33. See also *National Economist,* 2:214 (Dec. 21, 1889).

[10] Noblin, *Polk, Agrarian Crusader,* pp. 215-16, 217.

That proposal, while it made little or no headway in the meeting at St. Louis and was not considered at later meetings, deserves special attention because of its resemblance to the commodity credit plan put into effect in the 1930's. The committee said:

> The Government and the people of this country realize that the amount of gold and silver, and the certificates based on these metals, do not comprise a volume of money sufficient to supply the wants of the country, and in order to increase the volume, the Government allows individuals to associate themselves into a body corporate, and deposit with the Government bonds which represent National indebtedness, which the Government holds in trust and issues to such corporation paper money equal to ninety per cent of the value of the bonds, and charges said corporation interest at the rate of one per cent per annum for the use of said paper money.
>
> This allows the issue of paper money to increase the volume of the circulating medium on a perfectly safe basis, because the margin is a guarantee that the banks will redeem the bonds before they mature. . . . This system, now in vogue by the United States government, of supplementing its circulating medium by a safe and redeemable paper money, should be pushed a little further and conducted in such a manner as to secure a certain augmentation of supply at the season of the year in which the agricultural additions to the wealth of the Nation demand money, and a diminution in such supply of money as said agricultural products are consumed. It is not an average adequate amount that is needed, because under it the greatest abuses may prevail, but a certain adequate amount that adjusts itself to the wants of the country at all seasons.
>
> For this purpose let us demand that the United States government modify its present financial system:
>
> 1. So as to allow the free and unlimited coinage of silver or the issue of silver certificates against an unlimited deposit of bullion.
>
> 2. That the system of using certain banks as United States depositories be abolished, and in place of said system, establish in every county in each of the States that offers for sale during the one year five hundred thousand dollars worth of farm products; including wheat, corn, oats, barley, rye, rice, tobacco, cotton, wool and sugar; a sub-treasury office, which shall have in connection with it such warehouses or elevators as are necessary for carefully storing and preserving such agricultural products as are offered it for storage, and it should be the duty of such sub-treasury department to receive such agricultural products as are offered for storage and make a careful examination of such products and class same as to quality and give a certificate of the deposit showing the amount and quality, and that United States legal-tender paper money equal to eighty per cent of the local current value of the products deposited has been advanced on same on interest at the rate of one per cent per annum, on the condition that the owner or such other person as he may authorize will redeem the agricultural product within twelve months from date of the certificate or the trustee will sell same at public auction to the highest bidder for the purpose of satisfying the debt. Besides the one per cent interest the sub-treasurer should be allowed to charge a trifle for handling and storage, and a reasonable amount for insurance, but the premises necessary for conducting this business should be secured by the various counties donating to the general government the land and the government building the very best modern buildings, fire-proof and substantial.[11]

[11] Report of the "Committee on the Monetary System" presented to the St. Louis convention of the Southern Alliance at St. Louis, December 7, 1889, in the *National Economist*, 2:216 (Dec. 21, 1889).

Norman Jay Colman as founder and publisher of *Colman's Rural World*[12] was sympathetic toward the Alliance movement. He had been active in the Grange movement in the days of the ascendancy of that organization in the Midwest.[13] After his return from Washington in 1889, where he had served four years under President Cleveland as Commissioner of Agriculture and as Secretary of Agriculture,[14] Colman took an active interest in that new, virile, though short-lived, movement led by the Farmers' Alliances North and South. He identified himself rather closely and sympathetically for a time with the free silver movement and the sub-treasury plan. When Cleveland again became president in 1893, he did not recall Colman to the secretaryship of agriculture but chose, rather, J. Sterling Morton of Nebraska, a firm advocate of the gold standard.

The National Grange 1889-1897

The National Grange was vitally interested in all problems which beset the farmers. Its changing position on the currency issue, as stated in its various pronouncements, is, however, of peculiar interest in that it indicates what might be termed the "group-thinking process" to which all proposed solutions to economic problems should be subjected.

THE CURRENCY ISSUE

The Grange was in favor, as was the Alliance, of the creation of a monetary system which would meet the needs of an expanding national economy. In 1889 the National Grange passed a resolution favoring the free and unlimited coinage of silver. But during the 1890's, when free silver became a political issue, a division arose among the members of the Grange that made it necessary for that great organization of farmers to become silent on the subject. The resolution of 1889 stated:

> Contraction of the circulating medium of the United States has depressed the prices of farm products to the great injury of the agricultural classes; therefore . . .
>
> . . . we favor the free coinage of silver, and also favor the maintenance in circulation of the paper money of the United States, independent of the National banks, in sufficient volume to prevent any future contraction, and consequent embarrassment to our prosperity.[15]

That stand on the currency issue emphasized the need for more money in circulation but did not mention the need for a more

[12] "*Colman's Rural World,* published at Saint Louis, Missouri, for fifty-one years, [1865–1916] was generally recognized as one of the outstanding farm periodicals of the Mississippi Valley. . . ." G. F. Lemmer, "The Agricultural Program of a Leading Farm Periodical, Colman's Rural World," *Agricultural History,* 23:245 (Washington, 1949).

[13] See also G. F. Lemmer, *Norman J. Colman and Colman's Rural World: A study in Agricultural Leadership,* Ph.D. thesis in the Graduate School of the University of Missouri, 1947 (typewritten).

[14] The office attained Cabinet status Feb. 9, 1889.

[15] National Grange of the Patrons of Husbandry, *Proceedings,* Sacramento, Calif., 1889 (Philadelphia, 1889), pp. 110–11.

flexible currency automatically adjusted to needs.[16] On January 17, 1890, the Grange Committee on Legislation went before "various Committees of Congress" and urged legislation in accordance with demands adopted by the Order in 1889. The committee's statement on silver follows:

> For a long series of years this National Grange has been on record in favor of the free and unlimited coinage of silver, with a view to a larger volume of currency with which to transact the business of the country. Acting upon these instructions, your Committee urged the complete remonetization of silver, and its unlimited coinage. [17]

As of April 24, 1890, that committee prepared and sent to each member of Congress a communication stating: "We also assure you that a large majority of our members favor the full and complete remonetization of silver, and that all limitations as to coinage shall be removed."[18]

That position, however, was slightly modified in a resolution passed in November 1890:

> . . . we reiterate the demands of the National Grange at its last session, "declaring it to be the duty of Congress to provide by law for an adequate supply of a circulating medium to meet the demands of business — in such volume as will best serve the interests of the people," — thus equalizing the burdens and benefits, and relieving the monetary stringency.[19]

Again at Springfield, Ohio, in November 1891, a resolution favoring free silver was adopted:

> The National Grange does not believe that we now have sufficient currency in the nation for the legitimate purposes of trade and to meet necessary obligations; therefore . . .
>
> . . . this National Grange declares and expresses its opinion in favor of free and unlimited coinage of both silver and gold, just as it existed from almost the foundation of the Government up to 1873, when silver was demonetized.
>
> . . . we believe that the Government alone should issue money, and that we do demand that a sufficiency of legal tender notes be issued.[20]

Some modification in emphasis, which foreshadowed a change in attitude on the part of the leadership, was evident at the annual meeting held in 1892. At that session no resolution on the monetary question was passed. Nor did the Worthy Master, J. H. Brigham, make any affirmation on free silver, but simply quoted from the annual address of Worthy Master D. W. Adams of 17 years earlier in Charleston, February 1876:

> Only by a return to habits of industry and economy, guided by intelligence, can we regain our wealth and remove our load of debt. As an auxiliary

[16] For the stand of the Alliance on this subject, see pp. 6–7.
[17] National Grange, *Proceedings*, 1890, p. 86.
[18] National Grange, *Proceedings*, 1890, p. 90.
[19] National Grange, *Proceedings*, 1890, p. 133.
[20] National Grange, *Proceedings*, 1891, p. 176.

to this, we want a stable and sound currency that shall be a reliable measure of values and recognized as such by all the civilized world. For we may gain this truth from others and our own history, that an irredeemable fluctuating currency always favors speculators and sharpers at the expense of those engaged in productive industry.[21]

Using sentiments expressed by Adams, Brigham in effect made a plea to farmers to return to the "ancient virtues" of industry and economy as a partial solution of the complex problems of that day.

The Grange was silent on the money question at its annual meeting of 1893, but in 1894 the Worthy Master, J. H. Brigham, made a statement which marks the turning point in the attitude of the Grange on this subject:

I do not propose in this paper to discuss fully this question, [free silver] but hope to induce a thorough investigation of the whole subject of money, by the members of our Order. We are told that "the American people must learn the lesson of money, or they are lost." We shall certainly be the losers if we fail to understand the true principles which underlie a sound and safe monetary system. I would advise the members of our Order not to be content with reading "Shylock" and the "Seven Financial Conspiracies," but to investigate and read authors who dispassionately discuss the subject, without resorting to intemperate abuses of those who do not agree with their views.

There are writers, whose reputations are world wide, who have given years of thought and research to this subject; and whose conclusions are not influenced by any selfish interest. Read what they say before rendering a decision. *The real facts of history and the light of experience* will guide to correct conclusions.[22]

In that address by Brigham there is a definite shift from advocating a given monetary system to making a careful study of the nature of the monetary problem. That shift was evident from the action taken by the Committee on Finance which, in harmony with the Worthy Master's statement, recommended that the National Grange, as such, cease to support the free silver movement. They made the following report which was adopted:

Your Committee on Finance, to whom was referred that portion of the Worthy Master's address referring to silver, gold and currency of the country, have carefully examined the same, and the Committee are of the opinion that the position taken by the Worthy Master, in said address, is sound and correct so far as stated.

In the opinion of your Committee, there exists an honest difference of opinion, among members of the Order, upon some of the leading economic questions of the day, especially of the silver question. The National Grange has, at former Sessions, endorsed the free coinage of silver. This action, however, was, in our opinion, but the expression of the sentiment of the members then composing the National Grange at that time, and in no wise commits the Order, or is in no sense to be construed as the opinions of the majority of the members at this time, thereby causing much unfraternal discussion among the members of the Grange.

[21] National Grange, *Proceedings,* 1892, p. 15.
[22] National Grange, *Proceedings,* 1894, p. 20.

The discussion of this question may have caused many changes of opinion on this question. We do not deem it wise for the National Grange to go on record *for* or *against* any economic question upon which our membership radically differs, but we accord to each member the right of *individual* opinion and action upon all such questions, in accordance with his own convictions, untrammelled by the action of this body, or the action of any State, Pomona, or Subordinate Grange.[23]

Two years later (1896), the Grange adopted the following resolution which clearly indicates its consciously endeavoring to avoid taking a position on political issues which might develop dissension among the members of the Order:

WHEREAS, The monetary question was the principal issue in the national political contest just closed; and,

WHEREAS, The Patrons of Husbandry, as an Order, acknowledge allegiance to no political party, but are solely interested in the cause of good government; therefore,

Resolved, That we hope for such a settlement of the question of national finance as shall give to the country a sound and stable currency of sufficient volume to meet all the needs of business and of so constant a character as to be of equal value at all times and in all places.[24]

SUB-TREASURY PLAN

The Grange did not favor the sub-treasury plan proposed at the St. Louis convention of 1889. J. H. Brigham, the Master of the National Grange, opposed the plan of lending government funds to farmers with stored products as security. In speaking of the "sub-treasury" Brigham said:

The advocates of the measure claim that it would enable farmers to hold their crops until they could realize better prices than those usually paid. The large issue of fiat paper money provided for, is to prevent a stringency in the money market just when crops are ready to move.

The objections offered to it are numerous. No provision is made for farmers who do not grow cotton, cereals or tobacco. Farmers who grow other products see no reason for this discrimination against them. It is also class legislation to which the Grange is opposed. It would muster into the public service a vast army of employees, and extend the paternal feature of the government in a manner heretofore unknown. . . .

The Grange has never endorsed the measure, and in the interest of farmers may feel compelled to antagonize it. . . .

Brigham then discussed other proposals made by the Alliances and said:

The discussion of all these propositions should be encouraged, as out of discussion may come light and help for the needy. It is not, however, advisable for the National Grange to lend its powerful endorsement to propositions which have not been thoroughly digested by our members, and which may lead to dissension in our ranks.[25]

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[23] National Grange, *Proceedings,* 1894, pp. 203–04.
[24] National Grange, *Proceedings,* 1896, p. 153.
[25] National Grange, *Proceedings,* 1891, pp. 12, 13.

Brigham was appointed Assistant Secretary of Agriculture by President McKinley in March 1897, but continued as Master of the National Grange until the next annual meeting of that body.[26]

David Lubin's Subsidy Plans

Among the Grangers was a private individual, without official connections or government support, who took up the battle for better prices for farm products. We refer to David Lubin who sought justice for farmers first by one means and then by another. Lubin's tenacity of purpose, active mind and undaunted courage, his many failures and his ultimate success, give him a unique place in the history of agricultural economics. Men who can be so intense in advocacy of a given idea and also show such remarkable power of dropping narrower concepts and grasping larger ideas are exceedingly rare.

His influence upon thought and action relating to the economic problems of farmers covers a period of more than a third of a century, and falls into two fairly distinct periods.

Prior to the summer of 1896 he would be classified with leaders of organized agriculture and with members of the agricultural "wedge" in Congress who took a class point of view by seeking aid for farmers of the United States with little regard to the effect upon other classes in this country or upon farmers in other lands. As we shall see, he turned his attention to railroad rates, co-operative fruit marketing, parcel post marketing schemes, tariff revision, and — most particularly — to a plan for correcting tariff injustices by placing an export bounty on agricultural exports.

The second period of his work for agriculture came after his failure to secure Congressional approval of his export subsidy plan. Lubin left behind the local and national palliatives he had advocated and commenced to think in terms of the welfare of the farmers of the world as a basic element in international political and economic life. He grasped the idea that the interests of agriculture required a central clearinghouse for information about agricultural activities of the world. He conceived of and became active in creating the International Institute of Agriculture. Lubin's earlier period will be discussed here and the later period in another chapter.[27]

David Lubin was a successful merchant of Sacramento, California, before he undertook farming on a rather large scale. In 1884 he bought a 320-acre fruit farm and later a 1,280-acre wheat farm.

> To his surprise the business ability which made him a successful merchant failed to make him a successful farmer. He became perplexed. . . . [That]

[26] For the many activities of the Grange which had objectives of an economic and social nature see: T. C. Atkeson, *Outlines of Grange History* (Washington: National Farm News [1928]). This is a brief pamphlet.

[27] See pp. 254–57.

was the beginning of a surmise that something was wrong with agriculture, and further experience served to strengthen this view.[28]

As a farmer he faced serious marketing and price problems. Having an inquiring mind and being a man of action, he commenced at once to seek a solution for the problem of low prices for California's fruit and grain.

Fruit production in California had outgrown the western market. Placing California fruit on eastern markets was an expensive undertaking for which the farmers were not organized.

> At the time he came into the field, California fruits were mainly marketed through two big firms of commission merchants — Earl, and Porter Brothers. . . . The practical monopoly they had of the export fruit trade was rendered possible by the policy pursued by the railroad, which would only accept whole carloads, charging for them at the rate of six hundred dollars a car. As none but the owners of very big ranches could possibly be in a position to ship a carload of green fruit at a time, the small farmer found himself entirely at the mercy of the big middlemen who were squeezing the life out of him.[29]

This led to Lubin's interest in obtaining reduced railroad rates and in planning for co-operative shipments and sale by auction in eastern markets. In those undertakings he found many ready to work together. Important results were achieved. Carload rates on fruit to eastern markets were reduced from $600 to $300 and quarter-carload rates were established. Dominating private fruit shipping companies were forced to adjust their profit margins to meet competition of farmers' co-operatives. Those co-operatives have had many problems to solve but they have stood the test of time.

While struggling with the transportation problem, Lubin advanced the idea that produce could be carried to markets as books were carried by the post office. He illustrated his point by saying:

> Last Thursday I received a case of books from the publisher in New York weighing 165 lbs. for $1.65; these books came in six days, and were brought here by the U. S. Government through its post office department. . . . We all know in advance that the Government pays the railroad from three to six cents per pound for carrying the books, yet it only charges the publisher one cent per pound. Who pays the difference? Who but the people. Every taxpayer, producer or consumer, pays to make up the loss. . . . In these book shipments the publishers, the writers, and the merchants are benefited, and were farm products forwarded that way the farmers would be benefited.[30]

Lubin's proposal for improving the price of wheat was like unto his proposal for improving the price of fruit. He would reduce the cost of placing the product on the Liverpool market by means of an

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[28] Asher Hobson, *The International Institute of Agriculture* (Berkeley: University of California Press, 1931), p. 3.

[29] Olivia R. Agresti, *David Lubin: A Study in Practical Idealism* (Boston: Little, Brown and Co., 1922), p. 86.

[30] Agresti, *David Lubin*, p. 114.

export bounty paid by the federal government. Lubin stated his case for an export bounty on agricultural staples as follows:

The introduction of labor-saving agricultural machinery in the hands of the cheapest field labor in the world — in Argentina, Russia, India, Egypt, Asia Minor, and North Africa — has brought the American producer of agricultural staples face to face with a new and destructive competition. This new condition has already reduced prices of the more important staples below the profit point. When the producer of staple agricultural products cannot buy, the demand for labor in the manufacturing centers decreases, and wages must fall in spite of tariffs or trades unions.

How to restore to the producer of staple agricultural products his purchasing power, by assisting him to meet this unequal competition, and, by thus stimulating the demand for manufactures, maintain the rate of wages, is the unpretentious purpose of these pages to point out. The thousands of approving communications received from every section of the Union, have encouraged the writer to continue the work. . . .

The Proposition advocated . . . is, that the United States government reduce the cost of transporting staple agricultural products from American seaports to foreign seaports.

The object of the proposition is to enhance the price of staple agricultural products in the United States.

The reasons for enhancing the price of staple agricultural products in the United States are the following:

First — Manufactures are protected by a tariff, which causes an artificial enhancement of the prices of manufactures in the United States, whereas staple agricultural products are sold at the world's free trade prices. This is true not only as to the quantity exported, but as to the much larger quantity sold for home consumption.

Second — England being the chief purchaser of staple agricultural products, the highest price offered by her for our surplus is the highest price at which it can be sold.

Third — The highest price that England will offer for our surplus is no higher than she can obtain the same products for in any other country in the world. Therefore, our surplus staple agricultural products will bring no higher price than the lowest price at which they can be had in the other countries of the world.

Fourth — As the English price is fixed at Liverpool, the highest price that the surplus will bring in the United States is the price fixed there, less cost of transportation from place of production to Liverpool.

Fifth — Just as soon as a portion of the surplus is sold at the world's free trade Liverpool price, the price for the larger quantity held for consumption within the United States is not greater than that received for the surplus. The highest price for staple agricultural products (a portion of which is exported) in the United States is, therefore, the Liverpool price, less cost of transportation from the place of production to Liverpool, and that, whether the product be transported to England, or whether it be consumed within a stone's throw from the place of production.

Staple agricultural products, a portion of which is exported, raised in the United States are therefore sold at the world's free trade prices, less cost of transportation — whether exported or used in home consumption. Manufactures, on the other hand, are sold at artificial or protected prices. Consequently, as the producers of these staple agricultural products are compelled to sell at the world's free trade prices and buy manufactures at artificially

enhanced prices, they pay the cost of protection of manufactures. This latter fact is a manifest injustice.

To remove the injustice two remedies may be suggested.

The first is the abolition of the protection system entirely, thereby permitting the producer, who is compelled to sell his products in the cheapest markets of the world, to also buy in the cheapest.

Free trade would overcome the existing injustice, but free trade is not a practicable remedy; first, because we cannot have it, as the majority desire protection, and secondly, free trade is not desirable because it would lower the wage rate to the European and, presently, to the Asiatic level.

The second remedy is the adoption of the Proposition herein advocated: That the United States Government reduce the cost of transportation of staple agricultural products from American seaports to foreign seaports.[31]

In June, 1894, he [Lubin] achieved a first success when the proposal [subsidy plan] was adopted by the Republican State Convention of California as a plank in its platform. He continued the campaign of education among Granges and Farmers' Alliances, and the proposal was next endorsed by the State Grange of California.[32]

Lubin was a Granger and the National Grange gave him a sympathetic ear. While it did not endorse his specific plan by name, it passed a resolution favoring an export bounty:

. . . since agricultural staples producing a surplus for export can derive no benefit from a tariff on imports, we call upon Congress to equalize the protective system by extending to agricultural staples that just measure of protection which it is entitled to so long as protection is the controlling and public policy of this Nation, and that this be done by a bounty on the exports of agricultural staples, to the end that justice and equity may prevail, and that the independent land-owning farmers of the nation may not be driven into bankruptcy and ruin by the direct competition in the home market with the prices of like products produced in the cheapest land and labor countries of the world.

Resolved, That the Legislative Committee of the National Grange is hereby authorized and instructed to promote the advocacy of this proposition in a manner best calculated to impart general information on the subject among the people, and to aid the securing of such national legislation as may embody this proposition.[33]

By the end of 1895 Lubin had been successful in getting a bill[34] introduced in Congress to effectuate his idea of protection for agricultural staples by an export bounty. He proved himself an untiring promoter of the idea. He said:

Congress must be made to know that there is a profound public sentiment behind this demand for justice and equity. . . .

The present mode of taxation must necessarily be inequitable and unjust to the producers of agricultural staples so long as we have a protective system as at present in operation, limited to a tariff on imports.

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[31] David Lubin, *A New Political Issue. Protection to Staple Agriculture. Plan to equalize the burdens and benefits of protection, and for the amelioration of the condition of labor in manufacturing centers* (Sacramento, 1894), pp. 1–3.

[32] Agresti, *David Lubin,* p. 122.

[33] National Grange, *Proceedings,* 1895, pp. 144–45.

[34] H. R. 2626, Dec. 23, 1895.

The producers of agricultural staples in our country are necessarily compelled to sell in the home market their entire product at the world's international free trade prices. They should, therefore, be freely permitted to obtain in exchange in the home market whatever their product will exchange for at international free trade prices.

But the protective laws in operation prevent this. Protection enhances artificially all values, excepting those of the unprotected staples of agriculture. The purpose of the following Bill, then, is to remove this manifest injustice.[35]

The bill read, in part, as follows:

For the protection of agricultural staples and American ships in the foreign trade by authorizing the payment of bounties on exports of agricultural products of the United States, conditioned on their carriage in American or foreign vessels.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That on the passage of this Act, and after the lapse of fifteen months, there shall be paid, out of any moneys in the Treasury of the United States not otherwise appropriated, to any exporter of wheat or wheat flour, rye or rye flour, corn, ground or unground, cotton, hops, or tobacco, produced wholly in the United States and exported by sea from any port in the United States to any port of a foreign nation, certain sums, to wit: Ten cents per bushel on wheat; fifty cents per barrel on wheat flour; ten cents per bushel on rye; fifty cents per barrel on rye flour; five cents per bushel on corn; seven cents per cental on corn, ground; one cent per pound on cotton; two cents per pound on hops; two cents per pound on tobacco.

Sec. 2. That if any article named in Section One of this Act shall be exported in American vessels, the corresponding bounty on such export as designated in said section shall be increased by ten per centum over the sum therein provided.

Sec. 3. That all payments of bounty under this Act shall be made upon negotiable vouchers, payable in thirty days from date, issued by the Collector of Customs at the port of clearances and directed to the Treasurer of the United States; and the Secretary of the Treasury is hereby charged with making and enforcing the regulations necessary for the protection of the Government in administering this law.

Sec. 4. That the President of the United States is hereby directed to notify all foreign nations of the desire of this Government to abrogate any treaty provision in contravention with this act.[36]

In the autumn of 1894, a year before he introduced his bill, Lubin had visited the Universities of Wisconsin and Michigan and "left with them substantial sums for prize essays to be written by their students on 'Protection and the Farmer.' "[37] Under that stimulus two Michigan students, Charles Franklin Emerick and William Alexander Coutts, prepared monographs which took first and second

[35] David Lubin, *Protection for Agricultural Staples by an Export Bounty* (Sacramento, 1896), p. 2.

[36] Lubin, *Export Bounty,* p. 3.

[37] Agresti, *David Lubin,* p. 125.

prizes.[38] Although Lubin's subsidy plan had been endorsed by the Republican State Convention of California, and the general principle of a subsidy for agricultural exports was endorsed by the National Grange, Lubin did not get from the universities the help in promoting the export bounty idea for which he had hoped when he offered the prizes. Both of the prize essays were unfavorable to Lubin's proposal for an export bounty on agricultural staples.[39] Both Emerick and Coutts held the idea that any increase in price would stimulate production even though the price had been depressed far below that which had stimulated the given production.

Emerick reasoned that a bounty on agricultural exports that would enhance the price in the domestic market might so stimulate production as to defeat the avowed object. He drew upon the European experience in promoting beet-sugar production by paying bounties on exports. Emerick concluded, "As a reward for this expenditure of the public treasure, the sugar producers of Europe have been led to do business at a loss, while the other nations of the world have had the benefit of cheap sugar."[40] He took the position that "too large a percentage of the people of the United States are engaged in the production of food. Bounties upon agricultural exports would simply be an inducement to men to engage in an industry that is already overdone."[41]

W. A. Coutts, in his arguments against the export bounty, also declared that a bounty on exports would stimulate production at a time when production should be decreased rather than increased and would therefore:

> . . . arrest the one sure remedy for the agricultural depression in the United States, namely, the natural adjustment of the supply of farm products to the demand at a profitable price. . . .
>
> . . . the only real help is self-help. . . . American farmers must gird their loins and sally forth willing to meet the world on equal terms, so far as nature's terms are equal. Asking only for justice from the rest of the community, they must abide the result of free competition both at home and abroad. For them who diligently acquire knowledge and with industry and wisdom apply it to the cultivation of the soil, the issue is not doubtful. . . .
>
> It is the glory, alike of individuals and of nations, to vie with one another in the arts of peace and industry. There may be evils incident both to private and international competition, but they are greatly outweighed by the benefits. International competition is likely to increase in the future. As improvements in the means of locomotion and communication more and more annihilate space, and as civilization extends, the results must be to lessen

[38] C. F. Emerick, "An Analysis of Agricultural Discontent in the United States," *Political Science Quarterly,* 11:433–63, 601–39; 12:93–128 (September and December 1896, and March 1897). Also reprinted (New York, 1897). (Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Faculty of Political Science, Columbia University.) W. A. Coutts, "Agricultural Depression in the United States: Its Causes and Remedies," Michigan Political Science Association, *Publications,* 2:213–308 (April 1897).

[39] R. T. Ely said that most of the Wisconsin papers also developed views quite opposite to those of Lubin. See: Hobson, *The International Institute of Agriculture,* p. 21.

[40] Emerick, "Agricultural Discontent," *Political Science Quarterly,* 12:95.

[41] Emerick, "Agricultural Discontent," *Political Science Quarterly,* 12:99–100.

the advantages attaching to geographical position and to place all nations upon a footing more nearly equal for the production of wealth. There will result also a greater international division of labor. When all have come to recognize the folly of erecting barriers to free interchange, each nation will confine itself as much as possible to the production of those things for which it has a decided adaptation.[42]

The adverse arguments of Coutts applied equally to the protective tariff in which Lubin believed.[43]

Throughout 1894–1895 and the early part of 1896 we find Lubin here, there, and everywhere, educating and propagandizing; spending freely the wealth he had acquired as one of the means to fit him for Service. Seeking justice for all, he confined his efforts to no class, and was as ready to address the American Federation of Labor or the Tariff League as the Grange. In Sam Gompers he had a sympathetic listener; the labor unions were strong for protection, but they were not unwilling to see it extended also to the farmers. . . .[44]

The year 1896 was election year and the export bounty was a "recognized issue . . . the press was devoting considerable space to the proposal from one end of the country to the other."[45] Lubin wanted to debate the issue publicly and in April he challenged McKinley's campaign manager to a debate. But nothing came of the challenge. At about this time Lubin suffered something of a breakdown in health, went to Europe,[46] and did not return to the United States until in December.[47] After his return he continued to fight for the export bounty for another six months.

In May of 1897 Senator Frank Cannon of Utah, a Lubin convert, introduced an amendment to the Dingley tariff bill, which amendment provided for a specified export bounty on certain agricultural products "by way of an equalization to agriculture." The amendment was defeated by a large majority vote.[48] When the shipping interests proposed to support the bounty scheme, provided the exports "were shipped in American bottoms," Lubin realized that it would become a subsidy for shipping men and valueless as a subsidy for farmers,[49] and he turned to other methods of helping farmers.

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[42] Coutts, "Agricultural Depression," pp. 292, 202–03.
[43] The monographs by Emerick and Coutts contained discussions of the causes of the agricultural depression reflecting an academic point of view which will receive attention later. See *infra*, pp. 45–49.
[44] Agresti, *David Lubin*, p. 124.
[45] Agresti, *David Lubin*, p. 126.
[46] Hobson, *The International Institute of Agriculture*, p. 21.
[47] Agresti, *David Lubin*, p. 138.
[48] Agresti, *David Lubin*, p. 141.
[49] Agresti, *David Lubin*, p. 139.

2.
Congressional Investigations and Reports

THE AGRICULTURAL DEPRESSION claimed the attention of the Senate of the United States to so great an extent that on April 19, 1892, it adopted a resolution[1] asking its Committee on Agriculture and Forestry to prepare a report on the agricultural situation. Almost a year later, March 24, 1893, that committee adopted a resolution authorizing its chairman, Senator J. Z. George, to appoint two subcommittees of three members each, one "charged especially with the duty of investigating the condition of the agricultural industry of the country as it concerns cotton and other vegetable fibers, the other to investigate the grain and other farm interests not confided to the other subcommittee."

Senators W. A. Peffer and J. Z. George were chairmen of the two subcommittees. The two resulting reports are known as the Peffer report entitled "Agricultural Depression; Causes and Remedies," and the George report called "Condition of Cotton Growers . . ."

The Peffer Report, 1894

Senator Peffer's report[2] named the duties and responsibilities assigned to the subcommittee, made a statement on the general agricultural situation, and pointed out certain over-all causes as being responsible for the depression in both business and agriculture. Depressed grain prices and depressed livestock prices were attributed to fairly specific conditions. Remedies were suggested in the areas of

[1] "That the Committee on Agriculture and Forestry be, and they are hereby authorized and directed to ascertain in every practicable way, and report from time to time to the Senate, the present condition of agriculture in the United States, and the present prices of agricultural products; and if there be any of which the prices are depressed, then the causes of such depression and the remedies therefore." *Congressional Record,* 52nd Congress, 1st Session, April 19, 1892, p. 3412.

[2] U. S. Congress, Senate Committee on Agriculture and Forestry, *Agricultural Depression; Causes and Remedies,* Report by Senator W. A. Peffer, submitted to the Senate Committee on Agriculture and Forestry, Feb. 15, 1894 (53rd Congress, 3rd Session, *Senate Report 787,* serial 3288, v. 1, Washington, 1895). See Report p. 3 for a copy of the Senate resolution of April 19, 1892, asking for a committee report on the agricultural depression, and the committee resolution of March 24, 1893, authorizing the appointment of the subcommittees.

individual effort, community enterprise, and legislative action. The following excerpts show the results of the search for the economic causes of the agricultural depression.

The committee is charged to ascertain and report four specific facts:

(1) What is the present condition of agriculture in the United States? (2) What are the present prices of agricultural products? (3) If any of such prices are depressed, what are the causes thereof, and, (4) Whether the reports of the Department of Agriculture on the distribution and consumption of farm products, published from time to time by authority of the Secretary of Agriculture, contribute in any way to such depression of the market prices of such products, and whether any proper governmental purpose is subserved by such publication, and whether such publication should be continued.

In addition to these duties, the committee is charged with the responsibility of suggesting remedies for any depression in prices which shall have been found to exist.[3]

THE AGRICULTURAL SITUATION

It is clear that the area of farming lands has been greatly extended, that their fertility has been well maintained, and that their returns have been increased, in the aggregate, more than 100 per cent within twenty-five years. If this were all that is to be taken into the account the verdict must be that the condition of agriculture is good, for the farmers have been industrious and the earth has responded bounteously to their toil. But it is not all, and now we proceed to consider what remains.[4]

Regarding prices and depression the report states:[5] "Whether there has been any depression in prices can be ascertained only by comparing present prices with those of preceding years." Livestock and grain prices for different states during the preceding twenty-year period are shown with the comment: "An important item bearing on prices and depression of farm products is the cost of production." Cost of production figures for various crops raised in the states of Ohio, Michigan, Illinois, Kansas, Pennsylvania, and New York are presented. There are also tables[6] showing prices of agricultural products in gold, 1860–91 and relative prices of groups of non-agricultural articles in each year 1840–91. The comparison of these prices is summarized by saying:

. . . it will be seen, that while, on the general average, all prices have declined about 10 per cent since 1883, the average for the farm has been three times as great as that. And while the immediate causes for this difference are general in their nature, they have borne with greater weight on agriculture than on any other department of industry.

In regard to general causes of depressed prices[7] the committee noted "that depression is found to exist among many articles of

[3] Congress, *Agricultural Depression*, p. 4.
[4] Congress, *Agricultural Depression*, p. 10.
[5] Congress, *Agricultural Depression*, pp. 10–24.
[6] Congress, *Agricultural Depression*, pp. 59–61.
[7] Congress, *Agricultural Depression*, pp. 59–83.

manufacture as well as the products of agriculture." Blame for the greater depression of agricultural prices was laid at the door of the railroads, merchant mills and packing houses, and the "money power."

RAILROADS

One serious complaint was that railroad rates were discriminatory. Farmers were said to be victims of this not only as producers but also as consumers. These complaints were registered by farmers in the East as well as in the West.

MILLING AND PACKING INDUSTRIES

In speaking of the milling and packing industries the committee stated:

> . . . these powerful industrial agencies are strong enough alone and without any private understanding among themselves and without any conspiracy among them, to produce the effects which have followed their business operations. In other words, it is the logical result of such vast combinations of men, money, and means to keep prices on the lowest level of the range.

MONEY POWER

The committee gave particular emphasis to the influence of "the money power" in limiting the currency and thus depressing prices:

> In the opinion of your subcommittee, the most powerful factor in this downward trend of market values of farm lands and farm products is the concentration of the money power. The great bankers and speculators at centers of trade exercise a controlling influence in our financial legislation and dictate the policy of our Treasury Department. . . .
>
> Our financial legislation ever since the great war began has tended to the final culmination enacted last October, in repealing the only statute which authorized the coinage of silver dollars. At last we are absolutely on a gold basis and the Secretary of the Treasury is compelled to buy gold from speculators while there is $138,000,000 worth of silver coin and bullion in the Treasury, not including silver dollars covered by certificates.[8]

GRAIN PRICES

Turning to specific low prices for grain, the report dealt with competition, options and futures, and concentration of power. It stated that:

> Competition among farmers affects prices of farm products just as competition in other departments of industry affects values in those departments. Farmers, however, are at a disadvantage in this respect on account of their comparative isolation. . . .[9]

Bonanza farming was stated to be a significant factor in depressing the price of grain.

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[8] Congress, *Agricultural Depression,* pp. 64, 78.
[9] Congress, *Agricultural Depression,* pp. 25–26.

This "bonanza farming" is seen highly developed in the Dakotas, the new mountain States, and in California, where farms range from 5,000 acres to 200,000 acres. On these immense plantations farming is conducted with as much business tact and attention as a great manufacturing establishment or railway corporation.[10]

This method of farming has brought the cost of producing wheat down to about 35 cents a bushel on an average yield in two States — North Dakota and South Dakota. . . .

When it is considered that the market price of our surplus wheat is fixed in Liverpool, England, and that the export price to a large extent controls the price for what is sold in the home markets, it is readily seen that so large a quantity of 35-cent wheat thrown on the market must have a depressing effect on the general average of profits in wheat farming.

In California "bonanza" wheat farms are larger than those of North Dakota. It is not uncommon to find one man in this State exercising rights of ownership over a tract of 50,000 acres of land, and from that up to 100,000. . . .

Under the old methods of farming in California the cost of producing an acre of wheat was from $5 to $6, while now it is done for half that amount, and the cost of producing a bushel of wheat has been reduced accordingly to about 22 cents on an average crop. . . .

Our wheat prices are affected materially by competition of farmers in other wheat-producing countries. . . .

It matters not when our farmers market their wheat, it goes at a time when farmers in some other part of the world are harvesting their wheat. It is "wheat harvest" in one place or another every day in the year. . . .

OPTIONS AND FUTURES

Farm prices of wheat are injuriously affected by the business commonly known as dealing in "options and futures." . . .

It is true that no amount of speculating does or can create or destroy a bushel of wheat; but it is the speculative market that governs prices, and no man can know how much wheat is owned at any given time by a board of speculators, or how much actual wheat is included in the transactions of a given day or any number of days. . . .

Another fact worthy of consideration in this connection is the standing temptation of every dealer who has to fill a "future" to interest himself in depressing the market so that he shall not be in danger of losing on the guess he made when he fixed the price of grain to fill the contract. . . .

. . . overtrading tends to create extravagant estimates of the supply, and that of itself depresses prices.

. . . When prices are regulated by a market which appears to be very full they will tend downward.[11]

Ideas of the kind expressed in the Peffer report account for efforts to establish government control of future trading. They also stimulated general interest in crop estimates and market information so that farmers might have facts regarding supply and demand.

Concentration of power in the hands of the milling interests was another factor depressing grain prices, according to the Peffer report, and statistics were presented to show capacities of mills in Topeka, Kansas City, and Minneapolis.

[10] Congress, *Agricultural Depression,* p. 5.
[11] Congress, *Agricultural Depression,* pp. 27–28, 33, 35–36.

When men with large capital and with practically unlimited business facilities unite in establishing and conducting capacious milling establishments, collecting their supplies from over a wide region, purchasing them from a large number of individual farmers, their power over prices of wheat is very great.[12]

LIVESTOCK PRICES

Causes of depressed livestock prices were discussed in the report.[13] Competition from Australia, Argentina, and South Africa was given as a reason for low prices of wool and the decline in the sheep industry in the United States. Depressed prices in the horse market were thought to be accounted for by competition from the electric streetcar and the bicycle.

Prices of cattle have been depressed more than any other class of live stock, and this has been occasioned largely by the abnormal development of the business of cattle-raising in Texas and the northwestern Territories, and by conditions that have grown out of that business.

The committee indicated that the magnitude of great packing companies tended to "keep prices on the level of the cost line."

Combination of labor and capital multiplies effort, increases value of money, cheapens production, reduces the number of buyers and gives them control of the markets. Animals for slaughter, shipped to the great markets, are bought by agents of houses which deal in the particular class of stock, and such houses are comparatively very few.

REMEDIES THROUGH INDIVIDUAL ACTION

Peffer's report advised farmers to invent and apply individual remedies to fit individual situations, to work together as community groups to alleviate the depression, and to seek such aid as could come only through state and national legislation.

[Farmers] can regulate the quantity of land, if they have any . . . that they will till, and they can regulate the manner of tillage. . . .

The saving and judicious use of homemade fertilizers is great economy. . . .

The curing of meats and preserving fruits on the farm where they are grown effects important savings. As much as possible of everything the family needs ought to be produced on the farm and prepared there for use.[14]

Other individual remedies related to the introduction of new lines of production.[15] Grain sorghums were suggested for the "semi-arid" regions and sugar-beet culture was advocated. Having pointed out that wool growers were producing only 70 per cent of the wool used in the United States, the Peffer committee urged the sheep industry to expand to meet the domestic demand for wool.

Farmers were asked by the Peffer committee not only to readjust

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[12] Congress, *Agricultural Depression,* p. 37.
[13] Congress, *Agricultural Depression,* pp. 38–51.
[14] Congress, *Agricultural Depression,* p. 85.
[15] Congress, *Agricultural Depression,* pp. 87–88, 94.

their farm enterprises with a view to securing greater profit, but they were also asked to reduce their costs.

> If we are right in our conclusion that modern conditions of production tend to cheapness, the farmers must meet this tendency by reducing the cost of what they produce, or save its equivalent in some other way, or they must suffer the consequent losses.[16]

It was suggested also that the agricultural situation could be improved through the education and the "association" of farmers. Farmers' institutes were mentioned as meetings:

> . . . where men of learning mingle with plain farmers, and together they discuss practical matters pertaining to the daily work of the farm. . . . Through the operation of these and other instrumentalities . . . the intellectual horizon of our farmers has been greatly widened within the last twenty-five years.[17]

In addition to farmers' organizations and farmers' institutes, a form of association was suggested in which a large number of farmers were to join together for the purpose of operating on a scale comparable to the "bonanza farms" of the Dakotas. That was suggested as a means of reducing costs of production.[18]

Reference was made to railroads, packing firms, milling houses, etc., noting the way in which large scale operations enabled them to reduce costs of production:

> . . . the course of invention and combination will lie in the direction of lower ranges of prices. These things farmers will always have with them, and can counteract their effects only by corresponding economy in cost of production.
>
> . . . There is no good reason why farmers could not do as well with experience and training. A rate of progress such as we have made since abandoning wooden moldboards, continued seventy-five years, will bring us to the day of associated farming.[19]

But it was indicated that only free farmers could join in "associated farming." That led to a discussion of indebtedness, high interest rates, tenancy, and land monopoly as "evil influences" forming barriers to "associated farming." A progressive land tax was suggested as a remedy for land monopoly with the remark that this type of taxation "has the double advantage of producing public revenues while removing an evil of great influence."[20]

REMEDIES THROUGH COLLECTIVE ACTION

While major emphasis was given to the various things farmers should do to help themselves, several suggestions were made with

[16] Congress, *Agricultural Depression,* p. 85.
[17] Congress, *Agricultural Depression,* p. 5.
[18] Congress, *Agricultural Depression,* pp. 85–86.
[19] Congress, *Agricultural Depression,* p. 86.
[20] Congress, *Agricultural Depression,* p. 87.

respect to what might be accomplished through state and national legislation:

. . . States can do much to relieve agriculture by keeping freight charges uniform and reasonable on State traffic, and by establishing a warehouse and grading system so that farmers may have convenient and common warehouse and elevator privileges. They could then store their grains under State regulations, where it would be safe, and warehouse receipts could be used in trade when necessary, and, in emergencies, might be used in payment of local taxes. A warehouse receipt for wheat is good collateral at any local bank. With warehouses regulated by State laws farmers could better suit their convenience and inclinations many times in the matter of disposing of their grains. . . .

Among remedies by State legislation, perhaps none is more important than to equalize taxation. Let owners of all property bear their proper proportion of the public obligations. . . .

And if it be found that a just system of personal-property taxation can not be enforced, let it be abandoned; abolish all personal taxation and place taxes on land exclusive of improvements, so that a 25-foot lot in a city that is worth, for merchandising or manufacturing, $100,000 shall be taxed at one hundred times as much as a farm that, without its improvements, is worth only $1,000.

Concerning remedies by means of national legislation, we suggest —

First. An improved system of Government crop and market reporting. . . .

There is a general demand — it is practically unanimous among farmers — for a system of crop and market reporting by the Government that will give facts only and get them to the people as soon as possible. . . .

Frequent communications from the Department, showing present conditions of home and foreign markets, and conveying to farmers information relating to methods of dealing in farm products in all parts of the world would be of great benefit.

Second. Suppression of the business commonly known as dealing in futures and options.

Third. Consolidation of the transportation business to the end that charges may be uniform in all parts of the country and that carriage shall not cost more than it is reasonably worth.

Fourth. Cease class legislation.

Fifth. Improve our monetary system and change our financial methods in the respects following: (*a*) Restore silver coin to its ancient place as money; (*b*) provide an abundant legal tender national currency; (*c*) abolish banks of issue, establish public savings depositories, and keep all banks under direct surveillance of the Government; (*d*) reduce rates of interest to a reasonable and uniform standard.

Sixth. Divorce the Government from the moneyed interest and limit the exercise of its powers to purely public affairs.[21]

Senator Peffer's report did not have the unqualified approval of his colleagues. Senator George, together with three other members of the Committee on Agriculture and Forestry, stated: "We regard the paper prepared by Senator Peffer as very instructive . . . but . . . we do not commit ourselves to all the arguments presented in it, or to the conclusions reached by the author."[22]

[21] Congress, *Agricultural Depression*, pp. 100–03.
[22] Congress, *Agricultural Depression*, p. 157.

The George Report, 1895

While the the members of the Peffer subcommittee were at work, the subcommittee to which was assigned "the duty of investigating the condition of the agricultural industry of the country as it concerns cotton and other vegetable fibers"[23] prepared a report on cotton[24] which was submitted to the Senate by James Z. George, Senator from Mississippi. To ascertain the financial condition of producers of cotton:

> . . . the committee addressed a circular containing many inquiries to a large number of farmers in each of the cotton States, selected by the governors of the States in which they severally reside. Circulars were also addressed to a large number of merchants and other business men having dealings with farmers and familiar with cotton production and the condition of the producers. Many did not answer, but a sufficient number have answered to give a correct idea of the state of cotton agriculture in the United States [in the summer of 1893].[25]

COTTON AGRICULTURE UNSATISFACTORY

The report describes the conditions of cotton farmers as follows:

> *First.* That generally the financial condition of the farmers is bad, a very large percentage insolvent, and that very few indeed are substantially increasing in the possession of property. That the few who are actually solvent and making some increase in their estates are those who raise their own supplies, meat, corn, plow stock, producing cotton only as surplus. Whilst it can not be said that these are prosperous, yet as compared with their neighbors, who rely mainly on cotton, their condition is better. . . .
>
> *Second.* That with the prices prevailing in the years 1891–92–93 in nearly every part of the cotton-producing region, the cost of production equaled, if it did not exceed, the value of the cotton raised.[26]

CAUSES OF LOW PRICES

The committee introduced the discussion of causes of low prices by saying:

> We proceed now to inquire into the causes of the low prices.
>
> It is admitted that the obvious, apparent, and proximate cause is overproduction. . . .
>
> In the case of cotton, there has been an increasing demand, equaling the increasing supply. . . .
>
> In 1892–93 the supply was 11,702,000 bales, and surplus at end of the year for American mills was five weeks and for European mills eleven weeks, and the price 4.75 pence.
>
> In 1893–94 total supply was 11,609,000 bales, and at end of the season, 31st of August, 1894, the surplus for American mills was about four weeks' supply and for European mills nine and nine-tenths weeks.
>
> This utterly overthrows the theory of overproduction as the cause of the low price, the surplus in America and Europe being less than in 1860.

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[23] Cf. p. 19, footnote 1.

[24] U. S. Congress, Senate Committee on Agriculture and Forestry, *Report of the Committee on Agriculture and Forestry on Condition of Cotton Growers in the United States, the Present Prices of Cotton, and the Remedy; and on Cotton Consumption and Production* (53rd Congress, 3rd Session, *Senate Report 986*, 2 parts, serial 3290, v. 3, Washington, 1895).

[25] Congress, *Senate Report 986*, Part 1, p. III.

[26] Congress, *Senate Report 986*, Part 1, p. III.

The above comparison of supplies and surplus is based on the world's production. . . .

Overproduction in the sense that more cotton has been produced than can find an effective demand at fair prices, in the present condition of the finance and trade of the world, is undeniably true. Overproduction in the sense that the needs of the world for cotton and cotton manufactures have been more than met is denied.[27]

The committee endeavored to establish the view that there were other factors which influenced prices; that overproduction is a relative matter depending on the *circumstances of the times.* They emphasized future trading and the demonetization of silver as major influences in accounting for the low price of cotton. Other contributing factors listed were the duty on cotton manufacturing machinery, foreign competition, credit problems, and lack of crop diversification. Regarding future trading the committee had no very clear conviction but showed a leaning toward the view popular among farm leaders:

Another cause has contributed to the low price. This is the enormous extent to which dealings in "futures" has attained in late years.

A great deal of very valuable testimony has been taken on this point. Whilst there is a difference between commercial men as to the effect of these dealings, yet we think the arguments advanced and the facts stated by those who oppose these dealings carry the greater weight, and are entitled to our approbation. . . .

We conclude, therefore, this part of our report by stating our conviction to be that whilst these dealings in futures can not for any long period control absolutely the price of cotton independent of the supply and demand, yet they clearly sometimes abnormally produce low prices, as well as high prices, as is admitted by their advocates, for a temporary period. But generally they depress, to a considerable extent, prices; and that Congress not only has the power to abolish them, but is in duty bound to do so.[28]

THE REMONETIZATION OF SILVER

While the committee favored the remonetization of silver as a means of raising prices, they insisted that remonetization should be on a world-wide basis:

We now consider that cause for the low price of cotton, which we deem the most potent — the demonetization of silver. Happily, the potency of this cause seems to be so generally recognized that but few deny it. . . .

We conclude this part of our report [on money] by emphasizing the view that the remedy for the low price of cotton, so far as it may come from an increase in the volume of money, will come only when such increase, however inaugurated, shall take place in the volume of the world's money. Cotton in its production and in its consumption is world wide. Its value or price is fixed, not in local markets, but in that market which represents the demand and the supply for the whole world, to wit, — Liverpool. Two-thirds of our cotton crop is exported, and the price of the one-third consumed at home is fixed by the foreign market. Therefore any increase in our local

[27] Congress, *Senate Report 986,* pp. V–VI.
[28] Congress, *Senate Report 986,* pp. VIII, XX.

currency alone, whilst it may affect the price of commodities which are not exported, can have no effect on the price of cotton as fixed in the world's market.[29]

The idea that reducing the value of the dollar would not raise the price of cotton to the United States farmer, unless money throughout the world was treated in the same way, is a curious one. Can it be that the George committee overlooked the readjustment that would take place in the international exchange rate?

The report continued:

> There seems to be no immediate prospect for the great remedy needed to raise the price of cotton, to wit, the remonetization of silver. It becomes our duty, therefore, to consider such other remedies, or, rather, palliatives, for the prevailing distress which may be in our reach. . . .
>
> Any artificial changes in business brought about by external pressure alone will be short lived and in the main disastrous. The constant effort of each human being to better his own condition will in the long run be found to furnish the safest ground for hope that such methods will be adopted in the carrying on the business of a people as shall prove most advantageous.[30]

DIVERSIFICATION

That statement of economic and political philosophy and a glimpse of the world competition which the cotton grower had to meet paved the way for telling farmers to look to self-help in the form of diversified farming. It was recommended that cotton growers

> . . . so diversify their crops with others suited to our soil and climate as to supply most of their wants, and thereby to that extent secure to themselves to a large extent immunity from the evils of low prices. Such diversification will also tend to increase the price by diminishing the supply. This diversification will also be carried further by the raising of such other crops as are in demand in the markets of the world.
>
> . . . such diversification would further tend to the prosperity of cotton farmers in that it will facilitate the change, now absolutely necessary, from the expensive system of credit, whereby supplies purchased will be cheaper and the pressure to sell on a low market, coming from debt, will be lessened.[31]

Implications of the Two Reports

Both the Peffer and the George reports contained rather comprehensive descriptions of the agricultural situation in the areas covered. They both referred to a great diversity of causes of the depression. Overproduction was admitted but the George report softened the blow of telling the farmers that they were to blame by stating that it was overproduction with respect to market demand rather than with respect to need.

Both reports called for the remonetization of silver but, curiously,

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[29] Congress, *Senate Report 986,* pp. XXI, XLI.
[30] Congress, *Senate Report 986,* p. XLII.
[31] Congress, *Senate Report 986,* p. XLIII.

the George report called for world-wide increase in the supply of money because cotton entered so largely into the world market.

Both reports suggested agricultural readjustments. The introduction of new crops for the market and for the feedlot, and more production for home use were emphasized. Obviously the suggestion of shifting to new commercial crops was intended to improve the prices of staple crops by reducing supply. The shift to greater production for home use aimed to reduce the production of staples and to lower the cost of living.

Making agricultural adjustments that would reduce the supply of major staples was the one thing that farmers, as farmers, could undertake. The money problem was in the hands of Congress.

Reduced demand for farm products, caused by the depression in city occupations, was in part the result of reduced purchasing power of farmers. Reverting to self-sufficing economy on farms might, in the circumstances, help the farmer but would not help the city worker.

3.

Expressions of Economists

FARMERS AND THEIR CHOSEN LEADERS in and out of Congress were not alone in their efforts to understand the economic problems of agriculture during the closing decades of the nineteenth century. Professors of economics and outstanding thinkers among men of business recognized the existence of the agricultural depression and expressed their ideas about the situation. Their views provide samples of the thinking on the economics of agriculture in the 1890's.

George K. Holmes

During the summer of 1893, while Senator George's committee members were asking farmers, merchants, and other businessmen for information on the financial condition of producers of cotton, George K. Holmes, then with the United States Census Office, prepared a paper[1] which supplements the George report as it relates to the credit problem in the Cotton Belt. That article described the change in southern plantation agriculture as a result of the emancipation of Negro slaves and the dissipation of the planters' operating capital during the "War Between the States." It described the way in which planters became dependent upon moneylenders and the way in which croppers were dependent upon planters for food and clothing, and, in turn, the way in which that dependency upon moneylenders forced planters too largely into a one-crop system.

Holmes pointed out that where planters and farmers learned to produce much of their own food supply and raise cotton as a cash crop, there was a chance of rising to independence.

> There is no doubt that the plantation owners can work out their own salvation, if they will, in spite of the low quality of labor that they must hire. The question is whether they have the will to do so, whether long custom and tradition have not so incrusted them that they have lost their adaptability. From the tenants little can be expected. Most of them are so

[1] G. K. Holmes, "The Peons of the South," American Academy of Political and Social Science, *Annals*, 4:265–74 (September 1893).

wanting in the instincts on which their rise from the kind of peonage under which they live depends, that they will not do better than they are doing.

It rests with the plantation owners to determine whether the South shall escape from the thralldom of the crop lien. Southern farming, both large and small, needs to shun the storekeeper as much as it can. When the supplies for farm and family are derived mostly from the farm itself, it is apparent that the charges against the cotton crop will be reduced, a margin for saving established and that peonage will be abolished. After this has been done cotton production can not be forced upon the farmer and he can begin the diversification of agricultural products and branch out into stock raising, truck farming, fruit culture and other occupations according to his opportunities and his markets. The ills of the farmers are not going to be cured by legislation; "our remedies oft in ourselves do lie, which we ascribe to heaven."[2]

David A. Wells

While no one in the United States had specialized in agricultural economics prior to 1900, there were many economists who took an interest in the economic problems of the farmer as a part of the whole national economy.

David A. Wells, a businessman and practical economist, wrote on economic questions with a view to promoting a better understanding of specific problems. It is not surprising, therefore, that in his book on *Recent Economic Changes,* published in 1889,[3] he undertook to explain the decline in the price of farm products.

> All, therefore, that can be confidently affirmed in respect to the extent of the recent depression of prices is, that comparing the data for 1885–'86 with those of 1866–'76, the decline in the wholesale prices of most of the staple commodities of the world's commerce has been extraordinary, and has extended to most countries; and that the estimate of M. Saurbeck . . . of thirty-one per cent, as the average measure or extent of this decline, is not excessive.
>
> . . . all economists and financial authorities have substantially agreed that while many circumstances may and doubtless have been contributory, the extraordinary movements in prices under consideration must *in the main* be referable to one of two causes: *First,* a great multiplication and cheapening of commodities *through new conditions* of production and distribution, which in turn have been *mainly* (but not exclusively) due to the progress of invention and discovery; and, *second,* that the precious metal used for standard money, viz., gold, has, through relative scarcity, owing to diminished production and increased demand, greatly appreciated in value; in consequence of which a given amount of gold buys more than formerly, or, what is the same thing, the price or purchasing power of commodities, in comparison with gold, has fallen.
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> As to which of these two causes has been more influential, the best authorities who have investigated the subject widely differ.[4]

Wells then reviewed the facts regarding the increased production of wheat in the United States and in other countries and contrasted

[2] Holmes, "Peons," Amer. Acad. of Polit. and Soc. Sci., *Annals,* 4:274.

[3] D. A. Wells, *Recent Economic Changes and Their Effect on Production and Distribution of Wealth and the Well-being of Society* (New York: D. Appleton and Company, 1889).

[4] Wells, *Recent Economic Changes,* pp. 122–23.

the increase in production with the increase in demand and concluded: "It is obvious, therefore, that with this limitation of market, any enlargement of the surplus wheat-product of the United States must inevitably reduce its price at home and abroad."[5] Wells also reviewed the world cotton situation and the world wool situation and concluded that the supply and demand accounted for the low prices of those products.[6]

With respect to gold as the standard of value, Wells wrote in 1893:[7]

> In all that has been written or spoken on this subject, on either side of the Atlantic, that has fallen under my observation, no one has ever named a single commodity that has notably declined in price within the last thirty years and satisfactorily proved, or even attempted to prove, that its decline was due to the appreciation of gold. And the reason for such default is that it cannot be done. On the other hand, not a single commodity that has notably declined in price within that time can be named, in respect to which clear, abundant and specific evidence cannot be adduced in proof, that its decline has been due to decreased cost of production or distribution, or to changes in supply and demand occasioned by wholly fortuitous circumstances. . . .
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> . . . The decline in prices, although extensive, has fallen far short of embracing all commodities, and has not been manifested simultaneously. It has been mainly confined to those commodities whose production and distribution have been cheapened by new inventions and discoveries. Dividing such commodities into classes, it has been largest in those like the mining and smelting and working of metals in which new discoveries and inventions have been most numerous and successful. On the other hand, all that class of products which are exclusively or largely the result of handicrafts; which are not capable of rapid multiplication, or do not admit of increased economy in production, have as a rule exhibited no tendency to decline in price, but rather the reverse.
>
> And then in respect to the one thing that is everywhere purchased and sold for money to a greater extent than any other, namely, labor, there can be no question that its price *measured in gold* has increased in a marked degree everywhere in the civilized world, during the last quarter of a century. Had the purchasing power of gold increased during this period, a given amount would have bought more labor and a fall in wages would have been inevitable.

American Economic Association Meeting of 1892

At a meeting of the American Economic Association in 1892, the evening session of August 24 was devoted to the subject, "The Farmers' Movement."[8] At that session Professor Charles S. Walker, of the Massachusetts Agricultural College, presented the following statement of the problem which was discussed by a number of leading economists of the United States:

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[5] Wells, *Recent Economic Changes,* p. 179.

[6] Wells, *Recent Economic Changes,* pp. 179–88.

[7] D. A. Wells, "The Downfall of Certain Financial Fallacies," *Forum,* 16:132–33, 135–36 (October 1893).

[8] "The Farmers' Movement," American Economic Association, *Publications,* 8(1):62–76 (January 1893).

The farmers' industry has increased the supply of agricultural products beyond the demand, with the consequent fall of price. Here is revealed the efficient cause of his pecuniary condition. The trouble, however, is not that the supply is too great, but that the demand is too little. The other producers have not kept up with the tiller of the soil. Of late the prices of many manufactures have fallen correspondingly, but this is offset by the fact that changed conditions of production force the farmer to buy many more tools, fertilizers and other necessaries than formerly, so that his total cost of production deducted from the market price of his product leaves him a smaller margin of profit than before. He finds that problems of distribution have not been satisfactorily solved. The farmers' movement is the awakening of these sturdy citizens from engrossment in manual labor to a sense of their duty, first to themselves and then to society. The movement may be slow, it may do much apparent damage, but it is irresistible, and though it may change the looks of things, in the end its results will prove beneficial. (1) Organizations of farmers are now many and strong, and constantly increasing in numbers, in their field of action, in usefulness and in power. (2) The movement is a widespread and powerful advance along all educational lines. Farmers are a unit in demanding the best education in everything pertaining to the science and art of agriculture, and to the knowledge and practice of manhood. (3) The movement is progressive along the line of coöperation. In time organized and educated farmers will master the difficulties of coöperation so far as it relates to agriculture. (4) Organization, education, coöperation have led to political action, within and without the old parties. From repeated failures farmers are learning how to take care of themselves politically. They press and enforce their demands patiently and persistently, meeting all attacks bravely, believing that wherein their claims may not be for the general good, the conflict with the demands of others will modify and correct them.[9]

The discussion was opened by J. P. Clark, of Jamestown, New York, a farmer who had served as secretary of the local county Grange of which he had been a member for 14 years. He remarked, ". . . it is an encouraging sign when trained minds give expression to the very thoughts I have heard farmers themselves give expression to for fourteen years."[10]

Considerable discussion followed, including such questions as whether or not farmers were more heavily taxed than businessmen and whether or not farmers paid higher freight rates than merchants and manufacturers. However, special interest centered about the statements made by Professor John R. Commons:

I should like to hear some mention made of what seems to me to be the important development of the farmers' movement, namely, the sub-treasury scheme. As far as my knowledge goes, that seems to me to be the most scientific plan put forward by any writer or thinker. As you know, the St. Louis platform provides for the depositing of the farmers' goods in warehouses, and for his receiving loans on short time, which are to be paper money, legal tender. When the farmer is ready to pay his notes he can go and redeem his grain, returning his notes, which are kept by the government in store until the next crop comes. Does not that meet exactly the defect in our currency? At that time of the year when the crops are harvested there

[9] American Economic Association, *Publications,* 8(1):62–63.
[10] American Economic Association, *Publications,* 8(1):63.

is a great demand for money. All the money is in New York City. The farmer must pay high rates of interest because money is actually scarcer in the West than it is in the East. In Canada, where they have a different banking system, I believe it is not so. When this great demand for money arises in the West the effect is to force down the price of the products of the farm just when the farmers have goods to sell, it is claimed 40 per cent. They only get 60 per cent of what they would get at other times of the year.[11]

Professor Edward W. Bemis, of the University of Chicago, replied to Professor Commons' statement:

It is shown by statistics that the farmer is in no need of any sub-treasury scheme to enable him to hold back his crops, as the prices of the staple crops average almost if not quite as high immediately after harvest as six or nine months later. But the farmers might get money or capital at lower rates of interest by adopting the principle of the German Raiffeisen, . . .[12]

Professor Bemis said further:

Among the causes of this discontent may be ascertained the great fall of over 22 per cent in general prices throughout Europe and America since 1873.

This has made it increasingly difficult to pay off mortgages, and has lowered the value of farms. Other classes of society have been able to recoup themselves in a very large degree for this rise in the value of money, or fall in prices, which is one and the same thing, by the introduction of improved instruments and methods of production. But the development that has contributed to the increased supply of farm products has been the opening up of new lands in the West, rather than the introduction of improvements on other lands. The farmers on the older lands would have been especially helped by such an increase of money from year to year as would have kept the purchasing power of the dollar stable. But this seems impossible of accomplishment without some international bimetallic agreement.

The census returns thus far published indicate that the value of mortgages is less than many feared, running from 5 to 30 per cent only of the value of the farm lands of a state. But tenant farming has much increased since 1880. The increase has been more than 50 per cent in several states.

But the kernel of complaint among the farmers, after all, is not that they have absolutely declined in wealth. They have not. The real trouble is that relatively the growth of our farming sections in wealth and population has been slower than that of cities. This is plainly inevitable, being due to the fact that, as the world grows wealthier, the demand for the finer finishing of goods grows faster than the demand for raw material. But the farmer may be given greater opportunities and the general movement toward the city retarded, with general benefit to all.[13]

Professor W. W. Folwell, from the University of Minnesota, put it:

We are all aware of this discontent of the farmer, and it has shown itself in a very marked degree in the Northwest. It dates a great way back, and is due to a great variety of causes, which have been mentioned by Professor Walker in a proper connection. There was an abundant period all over the Northwest in 1883–4–5, and we all got in debt. Thousands took up

[11] American Economic Association, *Publications,* 8(1):70.
[12] American Economic Association, *Publications,* 8(1):76.
[13] American Economic Association, *Publications,* 8(1):75–76.

farms, and borrowed money to buy tools. Thousands of people spread over Dakota, and where there were acres of rolling prairie there are now hundreds of bushels of wheat for sale. There was real distress, and a considerable number of farmers had to give up their farms. When hard times fall on the farmer he has no recourse. He cannot pass the loss along to the next man. He is right against nature.[14]

Professor Richard T. Ely, of the University of Wisconsin, opened his remarks with a characteristic phrase, "I wish that we possessed more accurate and detailed information," and then continued:

I think that the rate of agricultural profit is often lower than the current rate of interest. If it is, have we not an explanation of a very large part of the distress of the farmer? If the farmer buys a farm for $5,000 and pays $2,000 down and gives a mortgage for the balance at six per cent interest, and if the rate of agricultural profit is only four per cent he has always to work against a rate of interest that is fifty per cent greater than the rate of agricultural profit. Consequently he must live like a wage earner, not like a land owner. I believe that this explains the distress of the farmer to a very considerable extent. . . .[15]

Of all the statements made on that occasion the one which shows the least sympathy was that of the sociologist, F. H. Giddings:

I think we shall all agree that the farmer has mixed his difficulties with his misunderstandings and made a pretty bad compound.

As to the real difficulties themselves, it is my very strong conviction that most of them lie in the farmer, and I think the facts that have been brought out are very good proof of that conviction. We have been told in instance after instance how the farmer has been bled and fooled and fleeced. When is he to get the better of the other fellow? Why, throughout these long years of his affliction, has he always come off worse in the contest? There must be something wrong in his own make-up, some failing on his part to see what the conditions of life are. I am not saying that the farmer has no grievances. I think that he does not get the same freight rates that other men get, and that he is taxed more than other men are taxed. But there is a reason somewhere why, if he controls more votes than other men control, which we may suppose to be the fact, he is not able to correct these evils. The failing is in himself. If you want to reach the root of the farmers' difficulties, you will have to begin with the farmers' minds.[16]

Charles S. Walker

In 1894 Charles S. Walker followed up his paper at the American Economic Association meeting of 1892 by again interpreting the farmers' economic demands:

The widespread movement among the farmers to-day is their effort to adapt themselves and their occupation to the ever-changing environment, so that they shall be once more masters of the situation, receiving their due share of the product of American industry and exerting their due influence in the formation and development of national character. . . .

. . . they have awakened to the fact that the problems of distribution

[14] American Economic Association, *Publications*, 8(1):73.
[15] American Economic Association, *Publications*, 8(1):67, 68.
[16] American Economic Association, *Publications*, 8(1):71–72.

have not been successfully solved. They believe that they get too little for the product of their labor and others too much, that they must bear heavy burdens of society while they are at the same time practically debarred from the enjoyment of the advantages of the progressive culture of modern life. . . .

. . . the farmer has for years demanded equal taxation. . . .

. . . He demands a system of finance that shall make the supply of money at all times equal to the demand. He wants an elastic currency that shall do the money work of the nation with justice to both buyer and seller, to both creditor and debtor. . . .

The farmer demands cheap transportation *between the farm and the market*. . . .

The farmer turns to the politician and asks of him that his party shall champion the cause of the farmer and see to it that the government guarantee to the agricultural classes their rights and promote their interests equally with those of other citizens. . . .

Finally, the farmer has, in his emergency, turned to the scholar and asked of him a fair statement of the problem and a clear solution, based upon historic and economic grounds. But the scholar has been too preoccupied and prejudiced to give the question that painstaking investigation and careful and impartial decision which alone can make his answer of much practical value to the hard-pressed agriculturist.[17]

James H. Canfield

The view in 1894 of Chancellor James H. Canfield, of the University of Nebraska, was stated as follows:

I think the Populist movement signifies the general disaffection of the rural community with the administration of public affairs. In an age of combination (not yet intelligent co-operation) the rural people feel weak when pitted against the people of the towns, because the latter can and do combine, and the rural people seek some form of political and economic combination that will secure equality of privilege and of opportunity. . . .

As a matter of fact the conditions of the farming classes in Kansas and Nebraska vary as elsewhere. Men who have tried to farm land never intended for anything other than pasturage, or to hold the earth together, are seeing hard times and great suffering. Other men, who have brought neither intelligence nor industry to farming, are suffering. It is a common saying out here that to raise and market a bushel of corn costs a man from ten cents to a dollar — according to the man! There is much philosophy in that. But many who have brought both intelligence and industry to farming are suffering — because of constant shrinkage in values, and because of their utter inability to readjust themselves to new conditions as fast as such conditions are either forming or changing. I do not believe the farmers as a class have been hit harder than business men as a class. But the farmer had less margin to his credit, less reserve power, less real strength with which to stand up under the blow.

The "animus of the West in its demand for silver," as far as such demand exists, is on the whole an honest belief, born of the unequal distribution of money — that more money is needed. . . .

The demand for an income tax springs largely from a desire to secure revenue in some way from those who now so generally seem to escape taxation.

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[17] C. S. Walker, "The Farmers' Movement," American Academy of Political and Social Science, *Annals*, 4:790–92 (March 1894).

I think that just at present the financial situation quite overshadows the tariff question in the West.[18]

William G. Sumner

In an article on "Causes and Cure of Hard Times," Professor William G. Sumner, of Yale University, in 1896, presented his point of view by saying:

It is an essential part of the case of the silver men that the country is having "hard times". . . .

There has been an advancing paralysis of enterprise and arrest of credit ever since the Sherman act of 1890 was passed. . . .

So much being admitted as to "hard times," it remains true, however, that by far the greatest part of the current declamation about hard times is false. Prosperity and adversity of society are not capable of exact verification. At all times some people, classes, industries, are less prosperous than others. . . . If this country, with its population, its resources, and its chances, is not prosperous by the intelligence, industry, and thrift of its population, does any sane man suppose that politicians and stump orators have any devices at their control for making it so? . . .

A dispassionate view of facts will go to prove that the world is reasonably and ordinarily prosperous at the present time, except where particular classes and industries are affected by special circumstances, as some classes and industries are being affected at all times. The land-owners of western Europe are in distress on account of the competition of new land, with cheapened means of transportation, but now we are told that the holders of the other side of the competition, the land-owners of the new soil, are victims of distress. It must be, then, that too much labor and capital are being expended on the soil the world over, and that, too, in spite of all the protective tariffs drawing people to the textile and metal industries. . . .

There is, however, another cause of hard times for some people which is far more important in our present case than any other. That is the case of the boom which has collapsed. . . . For three hundred years our history has been marked by the alternations of "prosperity" and "distress" which are produced by the booms and their collapses. When the collapse comes the people who are left long of goods and land always make a great outcry and start a political agitation. Their favorite device always is to try to inflate the currency and raise prices again until they can unload.[19]

J. Laurence Laughlin

J. Laurence Laughlin, Professor of Political Economy at the University of Chicago, published an article in November, 1896, on "Causes of Agricultural Unrest," the purpose of which was to vindicate the gold standard. He condemned the "single ideaed brain" and indicated that it was the under-education of the farmer that made it possible for the silver advocates to make the farmer believe that the demonetization of silver was an important factor in causing

[18] Letter of J. H. Canfield, printed with several other letters in "A Bundle of Western Letters. Some Testimony from Western Men on Trans-Mississippi Conditions," *The Review of Reviews*, 10(54):42–43 (July 1894).

[19] W. G. Sumner, "Cause and Cure of Hard Times," in *The Forgotten Man and Other Essays*, ed. by A. G. Keller (New Haven: Yale University Press, 1918), 149–53. This article had been published in *Leslie's Weekly*, Sept. 3, 1896.

the agricultural depression of the 1890's. Professor Laughlin analyzed clearly certain aspects of the causes of the agricultural depression, but was not himself adequately "ideaed" to see that, along with other influences which he described, relative shrinkage in volume and lack of flexibility and mobility of the circulating medium may have been contributory factors in determining the depth of the agricultural depression. His statement of the overinvestment and overproduction phase of the problem is summarized in the following excerpt:

> It is quite certain that in the last few years special conditions have surrounded the farmer and placed him in a peculiar position — conditions which have not been common to men in other industries. . . .
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> It is a strange development — indeed, a curious travesty on justice — that the railway, which by reason of its low cost of transportation has practically destroyed the farming interests of the East, should be regarded by the farmer of the West as the vampire sucking out the blood of his agricultural profits, and yet the Western lands could have been opened to seaboard markets only by means of it and its low rates. The Eastern farmer must justly regard the railway, and the resultant competition of the richer farm-land in the West, as the cause of his ruin and the force which has driven him to new employments; the Western farmer would not now be in existence if it were not for the railway. . . . Every owner of capital in its various forms must always take the risk that invention may devise something cheaper in operation than his existing machinery.
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> By the nature of his occupation, a farmer is subject to this principle quite as much as any owner of capital. His land may for the moment be the best in cultivation for wheat, but any conceivable discovery, or any improvement of existing devices, by which, directly or indirectly, new soils in any part of the world may be brought into competition with his own, must lower the price of his farm products. The wheat-growing farmer is, therefore, at the mercy of world-causes, and not merely of the domestic events within the boundaries of his own country. The reason is that wheat is a commodity whose price is not determined by home, but by foreign markets. . . .
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> . . . It must then be remembered, too, that as regards an article of food like wheat, after a person has taken his usual quantity, his demand does not rise with a falling price, but, after a saturation point of desire is reached, it practically ceases altogether. This accounts for the extreme fall in price produced by a supply only slightly in excess of the ordinary demand. Does the farmer of our Western States study to adapt his supply to the known demand, as the manufacturer does? Probably not: he plants because he has wheat-land, and leaves the rest to the mysterious play of forces outside his ken. Yet it is certain, nevertheless, that the price of his grain is determined by events in Australia, Argentina, Egypt, India, Hungary, and Russia, or by excessive rains in England, France, or Germany. . . .
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> . . . The agencies which opened up the superior wheat-fields of the Dakotas have not been confined to the United States. The progress of the age in the form of cheapened railway transportation revolutionized the agriculture of our country; but likewise the progress of the age in the form of cheapened steamship transportation opened up to European consumers the superior wheat-fields of Argentina, Australia, Egypt, and India. Yet the Western farmer ploughed and sowed blindly, as if his were the only sources of wheat supply in the world. . . .
>
> Feeling the coils of some mysterious power about them, the farmers, in all honesty, have attributed their misfortunes to the "constriction" in prices,

caused, as they think, not by an increased production of wheat throughout the world, but by the "scarcity of gold." This seems hardly an adequate explanation, just at the time when the gold product is doubling itself. If scarcity of gold has been pushing prices down, why does not an abundance of gold push prices up? This explanation of low prices as caused by insufficient gold is so far-fetched that its general use seems inexplicable. The existence of such a theory in explanation of the low price of wheat is so unnatural that it leads one to suspect the presence of a guiding power. Therein is to be found one of the most interesting parts of the present situation. The undereducated man, capable of holding but one idea at a time, and holding that idea fanatically, crushed by the coils of an industrial readjustment, with a system depressed by a speculative debauch, finds supposed helpers in the wiliest managers who have ever entered American politics. This is, in a nutshell, the true philosophy of the movement in favor of free coinage of silver.[20]

American Economic Association Meeting of 1896

The American Economic Association took up the subject of agriculture again in December 1896 under the title, "Is There a Distinct Agricultural Question?"[21]

L. H. Bailey, Professor of Horticulture at Cornell University, who was expected to lead the discussion, was prevented by illness from being present. He sent the following seven theses to be used as the basis of discussion:

1. The rapid increase of the system of land renting, the absorption of small holdings by wealthy land owners, and the abandonment of farms are changes that will benefit the farming class and the country at large. These changes are similar to those that have taken place in other lines of industry.
2. Mortgage statistics are of slight importance in determining the agricultural status.
3. The common system of unvaried cropping has been very detrimental to the mental aptitude of the farmer, and has thus put him into the position of the unskilled laborer.
4. The efflux of the young people from the farms has been due in good part to the rapid development of manufactures, which has furnished the opportunity to work under supervision. The tendency will be checked under the new system of farming which affords the same opportunity to those not competent to direct their own work successfully.
5. The new system will restore to the farms the scholarly, influential farmers of the earlier days.
6. The best effects may be expected to follow the rural delivery of mails and the extension of electric railroads into the rural districts.
7. The farmer is ready for a better education; and through educational means chiefly, working in harmony with normal economic changes already begun, the status of the farmer will be much improved.[22]

Professor W. A. Scott, of the University of Wisconsin, opened the discussion with the following statement:

I find it difficult . . . to speak on the theses formulated by Professor Bailey, for two reasons: In the first place, it does not seem to me possible to talk about

[20] J. L. Laughlin, "Causes of Agricultural Unrest," *Atlantic Monthly*, 78:579–84 (November 1896).
[21] "Is There a Distinct Agricultural Question?" American Economic Association, *Supplement to Economic Studies*, 2:52–67 (February 1897).
[22] American Economic Association, *Supplement to Economic Studies*, 2:52.

a depression in agriculture without confining one's remarks to particular sections of the country. Agricultural conditions vary widely in different parts of the United States. There may be and is depression in some sections while there is prosperity in others. In the second place, information regarding our agricultural history and conditions is too meager to enable us to speak with that certainty which comes from positive, detailed and comprehensive knowledge. I have endeavored to collect accurate information regarding two small sections of our country, one a township in Western New York, the other a township in Southern Wisconsin. After availing myself of all possible sources of information regarding these two districts, I find it impossible to make even approximately accurate comparisons between the farmer's income and expenditures either now or at previous periods. . . .

I doubt the existence at the present time of any strong tendency in the direction of the concentration of land holdings. Our bonanza farms are being broken up into small holdings, and I know of no evidence which indicates any great increase of farming on a large scale.

In regard to the significance of mortgage statistics, I think it is unsafe to make general statements. Sometimes they are an evidence of prosperity and sometimes of adversity. In the Western New York township of which mention has been made, the mortgage statistics are a fair criterion of the extent and character of the depression in agriculture in that region. Here mortgages were placed on the farms in the seventies and early eighties which represented from one-third to three-fourths of their value at that time, while now they not infrequently represent more than the entire value of the farm. The necessity for paying interest on such large mortgages is the chief source of the farmer's difficulties in this region. In Wisconsin, on the other hand, I have reasons for believing that mortgage statistics are not indicative of unfortunate agricultural conditions. On the contrary, they are often a measure of amounts invested in improvements which more than correspondingly increase the value of the farm, or they represent a portion of the purchase money of land which is rising in value.

In regard to the reasons for the efflux of young people from the farms to the city, mentioned in the fourth thesis, I feel uncertain. It is my belief that most young people leave the farms either because their services are not wanted, or because they believe farming to be unprofitable, or because they believe that the city offers more and better opportunities for success than the country. I do not believe that they are particularly anxious to work under some person's direction, or that the opportunity to work under direction in the country would greatly check the present tendency to leave the farms.

That there is a serious agricultural depression in many parts of the country I have no doubt, but I can see no remedy for it other than a gradual readjustment of agriculture to other industries. The difficulties which at present afflict the farmers in large sections of the country are chiefly due to the fact that we are now passing through a difficult transition period. The rapid extension of the area of cultivation in this and other countries in recent times with severe and unprecedented competition on the world's market for agricultural staples, have brought prices down to a point so low that they do not adequately remunerate the farmer who purchased land at high prices twenty years ago, and who now finds himself burdened with an interest charge and personal expenditure which it is impossible to support. The grievances of such farmers are real, but they are incurable. In order to be prosperous again the farmers of the depressed regions must adjust their production and their methods to the new conditions, and they must acquire such business experience and foresight as will enable them to keep their

industry in proper relations to the rapidly changing needs and conditions of nineteenth century industrial life.[23]

Professor Scott, who taught money and banking at the University of Wisconsin, took a completely objective view of the agricultural depression. He used both historical and geographical methods of studying the economic problems of the farmer. He did not even mention the proposals of Henry George, the Farmers' Alliance, the People's Party, nor William Jennings Bryan, but indicated that the problem arose out of expansion of production and extraordinary competition in the world market for agricultural staples rather than out of the deflation of the currency, which was popularly blamed for low prices of farm products. Since he believed that the problem was overproduction, his conclusion was *"I can see no remedy for it other than a gradual readjustment of agriculture to other industries."*[24]

Professor John F. Crowell, of Northampton, Massachusetts, pointed out the sectional character of the agricultural problem:

> The agricultural question within these sections consists essentially in the relatively unfavorable economic position, actual or assumed, of the agricultural population in the existing industrial organization, as compared with the other great economic interests, namely, the mercantile, the transportation and the manufacturing interests. . . .
>
> . . . while all other great divisions of productive enterprise can act together with more or less efficiency of control over the supply of goods to be made and marketed, the farmers as a class of producers cannot do so to anything like an equal extent. It is this view of the situation that gives them ground for charging up their grievances to other causes — monopoly at home and competition from abroad.[25]

Thus Professor Crowell recognized at that early date a difficulty which has become increasingly significant with the growing number of monopolistic elements in the industrial and middleman processes.

Professor Emory R. Johnson, of the University of Pennsylvania, continued the discussion on the agricultural question:

> The agricultural question is a question of maladjustment of agriculture to other industries. It is not national but international in its scope, and is to be settled only with reference to other nations. . . .
>
> The present maladjustment of agriculture to other industries is not entirely due to the modern revolution in methods of transportation, but it can be largely traced to this cause. Agriculturists pay a larger percentage of the value of their products for transportation than do producers in any other industry. Farmers pay in many cases from 30 to 50 per cent of the value of their product merely to place that product upon the market.[26]

Professor Johnson proposed as an important remedy state regulation of freight rates with a view to lower rates and less discrimination.

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[23] American Economic Association, *Supplement to Economic Studies*, 2:53–55.
[24] American Economic Association, *Supplement to Economic Studies*, 2:55.
[25] American Economic Association, *Supplement to Economic Studies*, 2:58–60.
[26] American Economic Association, *Supplement to Economic Studies*, 2:64.

He closed by saying, "The better transportation is regulated, the less acute will be the agricultural situation."[27]

Edward T. Peters, of the United States Department of Agriculture, approached the subject of the agricultural depression from a somewhat different angle:

> The existence of a distinct agricultural question is mainly due to a rise in the margin of cultivation. Vast areas which formerly lay below the margin of cultivation on account of their remoteness from markets have been raised above that margin by new facilities for transportation. Much of the poorer land whose produce was formerly a necessary part of the world's supply no longer need be cultivated. The margin of cultivation has risen above the level of such land, and it must either be abandoned or cultivated at a loss. Other land, though still above the margin of cultivation, is not so far above the new margin as it was above the lower old one. This means that it yields less economic rent than it formerly did and that its value has consequently fallen. It is, therefore, as land owner, and not as capitalist, director of industry, or laborer, that the farmer loses by a rise in the margin of cultivation, except that he may suffer, as the English tenant farmer notoriously has done, through the difficulty of removing his capital from land which he no longer finds profitable.
>
> We are sometimes told that the intelligent farmer is still prosperous. Other things being equal, he has, of course, a great advantage over the dull one, but it is as a director of industry that the farmer finds a sphere for superior intelligence, and we have seen that it is not in that capacity, but as a land owner, that he loses by the rise in the margin of cultivation.[28]

Columbia University was represented by an economist, Professor E. R. A. Seligman. While Professor Seligman's statement shows no evidence of a detailed knowledge of the farmer's problem, the comprehensiveness of the views of that city economist with regard to the character of the agricultural problem makes it seem desirable to quote him in full:

> There seems to me to be two parts in the discussion of the agricultural question. There is, first, the industrial problem involving the relations of the various classes of this particular occupation to one another; and secondly, there is the question of the relation of the agricultural industry to the other industries of the country — not indeed the present relation only, but the changes in that relation which have taken place during the past fifty years.
>
> There is most decidedly a distinct agricultural problem. The causes thereof are not far to seek. The trouble is that the people of this country have been living pretty much in a fool's paradise. We considered ourselves different from all other peoples, and believed that there was a different future in store for us. For a long time we had no agricultural problem, not because our economic methods were at all superior to those of other nations, but because of the vast fields of the West. Subsistence kept ahead of population, and especially with the revolution of transportation facilities and the opening up of the trunk lines, the United States became the granary of the world. To this, above all else, was due our immense prosperity and our immense increase in population.
>
> It is a mere platitude to say that this period of our history has gone, never to return. Such a phrase must be repeated with emphasis, for many

[27] American Economic Association, *Supplement to Economic Studies*, 2:65.
[28] American Economic Association, *Supplement to Economic Studies*, 2:65–67.

of us do not seem to realize the fact. We are no longer the granary of the world; other lands and other nations are competing with us to furnish the world's food supply. Not only are South America, Russia and India competing with us successfully, but when the Trans-Siberian Railroad shall have been completed, the almost limitless wheat fields of Southern Siberia will be available in the world's markets.

This means that not for many years can agriculture again occupy the position hitherto held in relation to the other industries of our country. It is idle to look forward to great prosperity for our farmers until our population has again caught up with subsistence, until we are no longer a wheat-exporting, but a wheat-importing nation; it is not likely that we shall continue to be the world's feeder.

The conclusion from this reasoning is two-fold. In the first place, the United States will become in the immediate future ever more and more an industrial, manufacturing nation, like England, rather than remain a preponderantly agricultural nation; there will be the relative unimportance of agriculture and the relative importance of industry. Secondly, the question whether we are to have a body of independent farmers or of peasant tenants on our soil will depend largely upon the ability of the American farmer to adjust himself to these new conditions — an ability itself largely influenced by his economic and moral qualities. His chief help, it seems to me, is to come from the intelligent application and manipulation of capital in its relations to agriculture.[29]

Professor W. F. Willcox, of Cornell University, presented materials from the census of 1880 and of 1890 with regard to land tenure and size of farms.

Thomas G. Shearman, of Brooklyn, New York, introduced the subject of taxation and said:

The trouble is that there has been in the past a wrong division of the burden of taxation. What is needed is not more legislation but the undoing of the evils of past legislation; more law, indeed, but less statutes. We have taken the wrong step in the method of taxing our railroads and corporations upon their capital and tangible, corporeal property and at much too high a rate. What ought to be taxed is the franchise which is the real capital, and this has often been entirely omitted in taxation. The farmers have submitted more or less willingly to a system of indirect taxation with a result that this class has paid more — I don't mean in proportion, but absolutely — than other classes far more able to pay taxes. The cause of the evil lies in bad systems of taxation enforced by bad legislation, and the cure lies in the undoing of such bad legislation.[30]

While it will be noted that most of these speakers took a cool and objective view of the farm problem, showing little or no sympathy for the difficulties of the farmer, Charles S. Walker, Professor of Economics at the Massachusetts Agricultural College, had evidently been in closer touch with farmers and showed a sympathetic understanding of their problems. He said:

. . . I hold that there does exist a distinct agricultural question, and moreover that it is one of the great and vital questions of the day. The question is the important one whether the American farmer shall become a peasant

[29] American Economic Association, *Supplement to Economic Studies*, 2:60–61.
[30] American Economic Association, *Supplement to Economic Studies*, 2:66.

or whether he shall maintain the honorable and independent position which the farmers of New England and Virginia maintained in the first two centuries of our country's history. . . .

By using all available statistics it becomes evident again and again that, deducting rent and interest, the American farmer receives less for his exertions than does the laborer in the factory or the hired man on his farm. The consequence is that the American farmer to-day is living largely on his accumulated capital or the returns therefrom, and that this capital is so fixed that he cannot utilize it for any other than its present use without an almost total loss.

But the farmer is demanding a better state of affairs, to be brought about by education, a better knowledge of scientific agriculture and the general economics of agriculture. He is coming more and more to utilize the great principles of coöperation and division of labor, and is fast learning the necessity of adjusting his work to the great laws of wealth which govern the farm as well as the workshop. In these facts lies hope for the future that the American farmer will not become a peasant.[31]

Professor William W. Folwell, of the University of Minnesota, said:

The mortgage question is not a very serious one in Minnesota. Existing mortgage debts are being paid off or renewed.

For such agricultural problems as do exist I do not see much hope in legislation. Their solution lies in the progress of science and its application to agriculture, in the differentiation of industry and the better education of farmers.

The most serious thing is the state of mind among the farmers. They are both exasperated and discouraged. For a long time they have felt themselves to be at a disadvantage industrially, and to have been robbed by the railroad companies. Of late years they have come to believe that they are systematically plundered by a conspiracy of "plutocrats." In the campaign of 1896 this was manifest.

Such a belief is unfortunate, but it is still more unfortunate that it is partly true.[32]

The sociologists were represented at that meeting by Professor Lester F. Ward, of Washington, D. C., who said:

Involved in the discussion of this paper is the much-deplored fact of the abandonment of farms and the influx of population into cities. I believe that if Professor Bailey had been present he would have taken the ground that this is by no means an unmixed evil. It is only one side of a two-fold problem which is sociological rather than economic. There is going on a double process which I am in the habit of formulating as, on the one hand, the *ruralization of city populations,* and on the other hand, the *urbanization of country populations.* These two processes are going on simultaneously, and underlying both is the economic principle of the *standard of living.* I have given special attention to only the first of these processes, which is purely sociological; but the second, which is more specially economic, cannot be separated from it. Both are due to the general fact that rural conditions can only be appreciated through culture, while, in the present state of society, culture can only be acquired at centers of population. The modern facilities of transportation and intercommunication are giving rural populations a

[31] American Economic Association, *Supplement to Economic Studies,* 2:56–57.
[32] American Economic Association, *Supplement to Economic Studies,* 2:62.

taste of what culture and a higher intellectual standard of living mean, and they are gravitating cityward in search of it. At the same time the institutions of learning, public lectures, voluntary associations, theaters, and all the agencies of city life that secure mental friction and inspire intellectual, scientific, and artistic development, are producing a distaste for the artificial conventionalities of city life and a yearning for that solid communion with nature which can only be realized by rural life. Of this we are now witnessing the result, but its earlier stages are chiefly those preparatory steps which look to the superficial observer like the abandonment of the country. But the tendency to equilibration is already manifest and it will ultimately be complete.[33]

Lubin Prize Essays, 1896-1897

RELATIVE WELL-BEING OF FARMERS

Charles F. Emerick, winner of the first prize for a monograph prepared under the stimulus of David Lubin's prize money left at the University of Michigan, published the results of his research in 1896–97.[34] He attempted to review the facts with regard to the agricultural situation and the relative well-being of farmers as compared with other elements of the population.[35] With that in view there was a discussion of the significance of the relative increase in rural and urban populations, relative increase of rural and urban wealth, and relation of agriculture to transportation. Emerick then discussed four proposed remedies for the agricultural depression: free coinage of sliver, a general property tax, an export bounty on agricultural staples, and the tariff.

Emerick described the way in which cheapened transportation had depressed farmers in the East through greater production in the West, and stated that the difficulty in some instances was due to crop disasters, but that the sharp fall in prices following 1891 was of signal importance, particularly because it had made more difficult payment of interest charges and mortgage debts.

He asserted that the economic condition of any particular farmer depended on the farmer's choice of which commodities to produce,[36] and of which articles to buy. Emerick also called attention to the fact that while farm wages had been high, taxes, too, had been high, and mortgage debts with 7 per cent interest had been hard to pay with the falling prices of commodities, that during the 40 years prior to 1890 the total rural wealth had increased greatly, and that the standard of living of rural people had materially improved.[37]

The author endeavored to make some comparison of the relative well-being of the farmer in contrast with his fellows in other occupations.

The farmer's interest does not lie exclusively in receiving remunerative prices for the commodities he may have to sell. His well-being is quite as

[33] American Economic Association, *Supplement to Economic Studies,* 2:57–58.
[34] Emerick, "Agricultural Discontent," *Political Science Quarterly,* 11:433–63, 601–39; 12: 93–127.
[35] For that part of the monograph relating to Lubin's export bounty plan, see *supra,* p. 17.
[36] Emerick, "Agricultural Discontent," *Political Science Quarterly,* 12:107.
[37] Emerick, "Agricultural Discontent," *Political Science Quarterly,* 12:109.

much dependent upon the prices he in turn must pay for articles which either enter into the personal consumption of himself and family or are used in the process of production. A comparative study of the fluctuations in the prices of agricultural products and of commodities in general between 1840 and 1891 reveals several important facts:

First, there have been three periods during which the average of agricultural prices has ruled lower than that of general prices: 1840–53, 1876–80, 1883–90. During the intervening periods agricultural prices ranged relatively high. From 1840 to 1853 the general average of agricultural prices ranged lower than at any other time in fifty-two years. . . .[38]

Emerick did not overlook the fact that character has something to do with any given individual farmer's well-being. He said hard work, sound judgment, and frugality are prerequisites to success on the farm, especially during a period of low prices.

CAUSES OF DEPRESSION

William A. Coutts, a student at the University of Michigan, gave an unusually careful analysis of the agricultural depression in a monograph[39] prepared under the stimulus of prizes offered by Lubin.[40] Coutts pointed out the difficulty of reducing production after investments have been made in land and equipment. He also gave attention to the expansion of demand with growth of population and the effect of prosperity upon demand. From the first years of the crop estimating service, emphasis was laid upon the importance of having a measure of the ups and downs of supply, but it was assumed that the demand would be relatively stable from year to year. Twenty-five years after the monograph by Coutts was issued, the United States Department of Agriculture began to give special attention to the demand factor in agricultural outlook reports. The following quotation gives the main outline of Coutts' analysis of the agricultural depression:

> In the United States for years past the "Agricultural Depression" has been a popular subject for discussion.[41]
>
> The depression of a single industry may be said to begin when the average profits yielded by it fall below the average profits yielded by industries of a like nature. . . .
>
> If then certain industries are more liable to depression than others, it is because they do not admit of being carried on, or at least are not carried on under conditions favorable to a speedy balancing of profits in case of a disturbance.
>
> . . . Capital cannot, however, be withdrawn with equal facility from all industries. Some admit of speedy expansion and contraction; others do not. Only in the former is the ebb and flow of capital anything like free. In these, the mobility of capital being great, any change in profits sets it in motion, and hence, although there may be continual oscillations, the balance is never greatly disturbed. . . .

[38] Emerick, "Agricultural Discontent," *Political Science Quarterly*, 12:105–06.

[39] W. A. Coutts, "Agricultural Depression in the United States: Its Causes and Remedies," Michigan Political Science Association, *Publications*, 2:213–308 (April 1897).

[40] For that part of the monograph relating to Lubin's export bounty plan, see *supra*, pp. 17–18.

[41] Coutts, "Agricultural Depression," p. 219.

To this class belong most distributing industries. . . .

Similarly in most manufacturing industries — here however expansion and contraction is not so free, the mobility of capital is not so great. There is more fixed capital. . . .

To avoid departure from normal prosperity industries must be susceptible of easy expansion and contraction.

Of all industries, agriculture is probably least susceptible of rapid contraction. The farmer cannot, like the merchant, increase or decrease his business to meet the variations in demand. Wheat may sell below cost, but a year must elapse before a decrease in the acreages sown can show its effect; and if the farmer merely changes from the production of wheat to that of some other article, which this year sells at a more profitable price, he may find that before he can bring the latter to market prices are reversed. To withdraw capital altogether from farming, would be to lose that large portion consisting of land, for withdrawal of capital would mean the abandonment, not the mere transfer of land. Besides, this method of contracting agriculture would necessitate the sacrifice of farm implements, and the further losses incident to changing one's occupation. . . .

. . . Ordinarily the expansion of agriculture is difficult and necessarily slow, but for a score or more of years, unique circumstances have rendered it exceedingly easy and wonderfully rapid. . . . at present it is only desired to point out that while the inherent difficulty of contracting agriculture has continued, the difficulty of expanding it has been for a time suspended, and that consequently the conditions most favorable to depressions have been present. . . .[42]

. . . the cultivated area, in sixteen of the most important nations of the world,[43] has increased in greater ratio than population. . . .

. . . farm products have undoubtedly increased in still greater ratio, for throughout Europe, improvements in the art of agriculture have enhanced the yield per acre. Moreover the progress of mechanical arts has rendered a larger proportion of the cultivated area available for the production of food for man than ever before. . . .

The export from India has long been regarded as a chief factor in reducing the price of wheat. . . .

But the increase in India, though enormous, is yet not so great as that in the United States. It has indeed been surpassed by the single state of North Dakota. . . .

Notwithstanding that the cultivated area of Europe has been but very slightly increased since the year 1880, the production of wheat increased very largely during the succeeding eight years. . . .

LOWER PRICES AND PROFITS

Everyone knows that the cost of farming has been greatly reduced since the year 1860 by means of machinery. The adoption of improved machinery has gone hand in hand with the increase of farm products, or rather, has preceded and rendered possible that increase. . . .

But there has been another agency counteracting the natural tendency of increased production to lower profits, one not less potent than farm machinery, namely, the greater per capita demand resulting from the improved condition of the masses.[44]

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[42] Coutts, "Agricultural Depression," pp. 213–17.

[43] Listed in Coutts, p. 230, as United Kingdom, France, Germany, Russia, Austria, Italy, Spain, Portugal, Sweden, Norway, Denmark, Holland, Belgium, United States, Australia, and Argentina.

[44] Coutts, "Agricultural Depression," pp. 229–36.

Effectual demand depends largely on the condition of the masses.

. . . we should be warned against regarding a mere increase of farm product over population, as sufficient to account for depression. Such an increase is not incompatible with the continuance of an effectual demand at a price yielding ordinary profits, and so long as the ratio between supply and demand is established at such price there is no overproduction. . . .

If food has increased in greater ratio than population, this, in the absence of counteracting forces, would tend to lower prices and profits.[45]

Increase of farm product is not sufficient to account for depression, for there seems to have been practically no increase since 1888.[46]

It is generally admitted that in the U. S. protection cannot directly protect the farmer.[47]

But many people believe that it does so indirectly in maintaining the home market for its products.[48]

It increases the money wage the farmer has to pay and brings him nothing wherewith to pay the increase.[49]

As a minor cause of depression in American agriculture may be mentioned the tariffs levied by European nations on our products. . . .

European tariffs encourage production and thus limit demand for American produce.[50]

No question has called forth more discussion during recent years than the appreciation of money and its bearing on industrial depression.

The most opposite opinions are held not only upon the effect of appreciation, but also as to the actuality of appreciation. . . .

Almost the only point of entire agreement is that appreciation falls most heavily upon debtors, especially those whose debts are of long standing.[51]

CAUSES NOT MEASURABLE

In concluding our discussion of the causes that have contributed to reduce the prosperity of the farmer, we have not the satisfaction of being able to assign to each factor its place according to magnitude.

The fall in prices has no doubt been due to increased supply and of late years to decreased demand. The increased supply together with the circumstances that have rendered it possible, namely, the development and cheapening of transportation, bringing free rich soil from all parts of the earth within reach of the world's markets, must be regarded as the chief factor in depression in countries where rents have long been established and where the cost of production effected by machinery has not been very great. But in the United States the decrease in the cost of production has been exceedingly marked and the cultivators of the soil are also for the most part its owners. Hence, though increased supply has reduced prices here as everywhere, the question is: Would the American farmer not still have been reaping the ordinary profits, had not other depressing agencies been operating?

We have seen that other causes of depression have been operating; that, unquestionably protection and the inequitable taxation of land have been a burden on the farmer. . . . If the removal of these two would restore ordinary profits to agriculture, we might maintain that they were the sole depressing agencies. . . .

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[45] Coutts, "Agricultural Depression," pp. 226–27.
[46] Coutts, "Agricultural Depression," p. 241.
[47] Coutts, "Agricultural Depression," p. 244.
[48] Coutts, "Agricultural Depression," p. 245.
[49] Coutts, "Agricultural Depression," p. 249.
[50] Coutts, "Agricultural Depression," pp. 255–56.
[51] Coutts, "Agricultural Depression," pp. 261–62.

We are, however, forced to admit that the effect of none of the depressing agencies, whether natural or artificial, which we have considered, can be accurately measured. We cannot charge any definite share of the farmers' burden to the mistakes of government, but still less can we exonerate government. However large a part of the farmers' distress may be due to the appreciation of money, excessive supply of agricultural products, etc., a part, at least, must be charged to protection and unjust taxation. This part alone government has the power to remove and scant justice demands that it exercise its power.[52]

[52] Coutts, "Agricultural Depression," pp. 275–77.

PART TWO

EARLY DEVELOPMENT OF AGRICULTURAL ECONOMICS IN COLLEGES OF AGRICULTURE

AGRICULTURAL LIBRARY

4.

Gregory, of Illinois, to Bailey, of Cornell

AGRICULTURAL ECONOMICS, as a subject for teaching and research, was but little known in agricultural colleges prior to 1900. The biological aspects of farming had received primary attention. Here and there courses were given under the title of rural economy or rural economics, or economics of agriculture, or farm management, or agricultural history, which considered some of the economic aspects of agriculture. Some of the economic aspects of farm management were touched upon in general courses on agriculture which dealt primarily with the physical and biological aspects of farming, sometimes in terms of historical and comparative agriculture. But the outstanding farm economic questions of the day which were receiving so much attention from farmers' organizations, politicians, and such individuals as Edward F. Adams and David Lubin, were given little attention in most of the colleges.

But some of the roots and seeds are to be found far back. Jared Eliot and others were interested in agricultural surveys in the middle of the eighteenth century. The federal census of agriculture provided certain agricultural statistics beginning with 1840. And in the 1840's Commissioner of Agriculture Ellsworth's conception of the uses to which statistics could be put in guiding farmers with respect to advisable production adjustments[1] and his ideas regarding prices and quantities indicated a viewpoint that has proved significant through the years. It is evident that economic problems of farmers were being recognized in 1840. The agricultural colleges noted the existence of these problems long before specialists were assigned to the field.

As to early use of terms indicating interest in agricultural economics, in 1868 the University of Illinois[2] was listing a course called

[1] See U.S. Commissioner of Patents, *Report*, 1842 (Washington, 1843), pp. 64–65.
[2] Under the name of Illinois Industrial University.

"Agricultural Economy," and, in the same year, Cornell University's course was listed as "Economics of Agriculture." The reports of the Commissioner of Agriculture of the U. S. Department of Agriculture for 1867 and 1869[3] used the term "Farm Management."

In the closing decade of the nineteenth century solid foundations were being laid for the rapid development of agricultural economic thought in the early years of the twentieth century. The foundation builders included I. P. Roberts and L. H. Bailey at Cornell, R. T. Ely at Wisconsin, T. F. Hunt at Ohio, W. M. Hays at Minnesota, and, somewhat earlier, J. M. Gregory of Illinois and J. R. Dodge of the U. S. Department of Agriculture.

A statistical summary of the position of agricultural economics and agricultural history in colleges and universities at the midway point of the decade under consideration was presented to the Association of American Agricultural Colleges and Experiment Stations in 1896:

> This subject is taught under the following names: Agriculture, farm management, farm economy, political economy, farm accounts, rural economics, farm relations and management, etc.
>
> In 11 colleges the time given to this subject varies from 10 to 140 and averages 49 hours; the time given to lectures varies from 10 to 140 and averages 38 hours; the time given to practical or laboratory work varies from 0 to 60 hours.
>
> Two colleges teach this subject in the freshman year, 3 in the sophomore year, 5 in the junior year, and 5 in the senior year.
>
> In 14 colleges this subject is taught by the professor of agriculture, in 1 by the professor of horticulture, in 1 by the professor of chemistry.
>
> In a number of the colleges this subject is not taught at all, and in others in connection with other subjects. It is taught under history of agriculture in 6 colleges, where the time given to it varies from 10 to 55 and averages 27 hours.
>
> Two colleges teach this subject in the freshman year, 3 in the sophomore year, 1 in the junior year, and 2 in the senior year.
>
> In 13 colleges this subject is taught by the professor of agriculture or his assistant, in 2 by the professor of chemistry.[4]

Before reviewing the development of agricultural economics at the most outstanding of the surveyed institutions, attention is called to a man, some of whose economic writings in the 1860's were placed on college required reading lists in the economics of agriculture. Standing somewhat alone as an agricultural writer among men of American letters was Donald G. Mitchell, a novelist, an essayist, and a practical farmer.

Mitchell lived near New Haven, Connecticut, in a large house in the edge of the woods facing a fine stretch of excellent bottom land

[3] U.S. Commissioner of Agriculture, *Report*, 1867 (Washington, 1868), p. 335; *ibid.*, 1869 (Washington, 1870), p. 433.

[4] Association of American Agricultural Colleges and Experiment Stations, Committee on Methods of Teaching Agriculture, Report presented at the convention held in Washington, D. C., Nov. 10–12, 1896, in U. S. Department of Agriculture, Office of Experiment Stations, *Circular* 32 (Washington, 1897), pp. 5–6.

which he owned and farmed. He was a sensible, practical, gentleman farmer, who did much reading about farming and enough thinking to evaluate what he read in the light of his own experience. Mitchell wrote two books on agriculture. One[5] was based upon his reading; the other[6] was based upon his experience as a farmer, a gardener, and a country squire, observing and talking with farmers of his neighborhood.

In *Wet Days at Edgewood* is found an interesting and useful history of agricultural literature from the days of Homer to the time of William Cobbett; from the days when Greece was at the height of her glory to those Victorian days when Britain still felt secure in her greatness. Students of agriculture can ill afford to miss reading and re-reading that history of agricultural literature for background and for literary style. In Mitchell's *My Farm of Edgewood* is recorded the experience and the thinking of a New England squire who incorporated a vast amount of good farm management lore in a well written story of his farming experience. These writings of Mitchell's should be read and cherished by the agricultural economist who would have a breadth of view and a depth of insight into rural affairs.

Mitchell and Gregory were born in the same year, 1822. The value of Mitchell was recognized at Illinois during Gregory's reign.[7] A disciple of Gregory's, Thomas F. Hunt, included *Wet Days at Edgewood* in his required reading list[8] when he was teaching rural economics at Ohio State University.

When Hunt was a small boy, activities were being carried on at the University of Illinois,[9] under the leadership of John Milton Gregory, that were to have a profound influence on Hunt's life and thought.

John Milton Gregory

John Milton Gregory provided ideas as well as inspiration in the days of the early development of agricultural economics in the United States. At the age of 45, and with a rich experience as an educator in Michigan, Gregory became, in 1867, the first Regent (President) of the Illinois Industrial University which in 1884 became the University of Illinois.

Regent Gregory, a man of vision, gave his full energy for 13 years to the building of a university dealing with those principles which are basic to modern life. His enthusiasm for high levels of thinking enabled him to put his very life blood into the work at hand. He not only took the initiative in creating plans which would lead to the

[5] D. G. Mitchell, *Wet Days at Edgewood with old farmers, old gardeners, and old pastorals* (New York: Charles Scribner, 1864).
[6] D. G. Mitchell, *My Farm of Edgewood: a country book* (New York: Charles Scribner, 1863).
[7] Illinois Industrial University, Board of Trustees, *Third Annual Report*, 1869–70, p. 218.
[8] T. F. Hunt, *Lectures on the History of Agriculture and Rural Economics* (Columbus: Shepphard & Co., 1899), p. 145.
[9] Called the Illinois Industrial University from its founding, March 12, 1867, to 1884.

building of a university with a soul, but he taught courses in philosophy, history, and economics.

Not only did the agricultural students take courses in agricultural history and rural economy, but they took Gregory's course in political economy. The content of the course Gregory gave in this field was published in 1882 in a book entitled *A New Political Economy,*[10] which was dedicated to "the several hundreds of former students for whom its studies were undertaken." That book was an unusually clear presentation of the principles of economics. Gregory showed familiarity with 40 writers on economics representing the United States, Great Britain, France, and Germany. While Gregory had surveyed the best available literature of his time, his book was not simply a compilation or re-writing of the subject as others had presented it. Gregory made the subject matter his own and put his own personality into the presentation. He held a picture of the economic world in his mind and talked about it in understandable terms. He was a student of living reality as well as a student of books. Gregory's book on economics is not the product of a closet philosopher, but of a student of the activities of mankind. He approached the subject by saying:

> To gain a clear and complete view of this science, we must enter thoughtfully the wide domains filled with the incessant stir of daily working life. We must observe and question carefully all the facts presented by the busy millions of men who are covering continents and oceans with their work, and who are conquering into use and service every form of matter and all the potencies of nature.
>
> We must watch the development of labor, from its rudest beginning in the savage, to its highest achievements in the arts of civilized life. We must follow its triumphs, from the simplest fruit plucked by the child, to its mighty outcome in the commerce of cities, empires, and peoples.[11]

Gregory undertook to analyze the phenomena of the complex economic world in terms of "man's wants," "man's work," and "man's wealth." "They are the fundamental facts with which the science is concerned."[12] Gregory's statement, "Man stands at the beginning of political economy. Man . . . stands at the end of it,"[13] suggests at once Roscher's statement at the beginning of his work on political economy — "The starting point, as well as the object-point of our science is Man."[14]

References to agriculture are common throughout Gregory's *A New Political Economy.* Twenty pages are devoted to a chapter on agricultural or rural economy in which some significant points are stressed. One of these is the choice and combination of enterprises

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[10] J. M. Gregory, *A New Political Economy* (Cincinnati: Van Antwerp, Bragg & Co., 1882).
[11] Gregory, *A New Political Economy,* p. 10.
[12] Gregory, *A New Political Economy,* pp. 11–12.
[13] Gregory, *A New Political Economy,* pp. 12–13.
[14] William Roscher, *Principles of Political Economy,* 2v. (Chicago: Callaghan and Company, 1878), 1:51.

to obtain the fullest and most profitable utilization of the labor force of the farm:

> The objection will be made that men usually do best to confine their attention to a single business or a single branch of it even. This is true where large experience is required for the mastery of the one business, and when the attention required by the one branch forbids giving attention to the others. But it is easy for the farmer to select, out of the wide range of cultures possible to his soil and situation, those which shall be adapted to his lands, to his markets, to his working forces, and to each other. And all this is consistent with his giving his attention chiefly to one branch of farming, as sheep husbandry, cattle-raising, or grain culture.[15]

Gregory recognized that the combination of enterprises rather than "the division of labor" was a characteristic of agriculture determined by natural conditions and characteristics of the enterprises which make up the farmer's program. He said:

> Another peculiarity of farm labor is the slight extent to which the division of labor is applicable to its work. This organization of labor which, as we have seen, has lent to the manufacturing arts much of their enormous increase of productiveness, scarcely finds place at all in agriculture. Farm operations are distributed through successive seasons of the year, and are not usually divisible into separate processes which may be assigned to different laborers, differing in strength and skill. The introduction of machinery, such as the mower, the reaper, and the thresher, has greatly assisted and lightened labor; but the fields must still be plowed, the seed planted, and the harvests gathered, each in its own season; and so the plowman must also serve as seed-sower and harvester. The wiser diversification of farming, and the introduction of farm manufactures, may, perhaps, help to economize labor by varying its demands, and by furnishing both steadier and more varied employments, but farm labor must forever remain largely unorganized labor.[16]

Differences in financial results due to differences in qualifications of farmers were emphasized in the following terms:

> Skill and intelligence win sixty and eighty bushels from the acre, where ignorance scarce gets twenty; and the soil which refuses to be subdued by unintelligent labor, yields the richest harvests to him who knows its constituents and understands its proper management.[17]

Gregory's broad conception of the economic relations of the farmer is indicated by the following paragraph:

> The relations of agriculture, as one of the largest groups of the world's industries, (1) to the world's populations, (2) to the other great classes of industries, (3) to the markets and (4) to governments, involve economic questions of the deepest importance. The full discussion of these questions would demand several chapters. They are indicated here only to show the scope which must be given to a full discussion of the field of rural or agricultural economy.[18]

[15] Gregory, *A New Political Economy*, p. 226.
[16] Gregory, *A New Political Economy*, pp. 218–19.
[17] Gregory, *A New Political Economy*, p. 218.
[18] Gregory, *A New Political Economy*, p. 227.

Gregory was a teacher who gave a lasting stimulus to his students. "His sympathetic nature and his efficiency as a teacher not only endeared him to students, but gave inspiration and direction to their lives."[19] From the beginning, Gregory stimulated interest in the economic aspects of agriculture. The economy of agriculture was offered at Illinois for third-year students and the course was described in the spring of 1868 as follows:

> AGRICULTURAL ECONOMY — Relation of Agriculture to the other industries and to commerce. The several branches of Agricultural book-keeping, the farm book, herd book, etc. RURAL LAW — Of tenures and conveyances of land, ... Foreign Agriculture, History and Literature of Agriculture.[20]

G. E. Morrow

Upon the appointment of G. E. Morrow as Professor of Agriculture at Illinois in 1877, the description of the course in rural economy changed. The first catalogue which carried the name of Morrow as Professor of Agriculture announced separate courses in rural economy and history of agriculture and the general text relating to courses in agriculture stated:

> In the second term of the fourth year, Rural Economy is studied, including the relations of agriculture to other industries and to national prosperity; the influences which should determine the class of farming to be adopted; comparisons of special and general systems; the uniting of manufacturing with farming; and also the culture of the various farm crops, cereals, grasses, etc. In the third term of this year a course of lectures is given on the History and Present Condition of Agriculture in this and other countries; its literature and associations, and on legislation as affecting it. This is followed by a course of lectures on Rural Law, designed to familiarize the student with the general principles of business law — his liabilities, rights, and duties. During this term, special investigations are made by each student in the agricultural laboratory. A Thesis is required, embodying the results of these investigations.[21]

In Morrow's report to the Board of Trustees in 1888[22] the phrase "rural economy, general farm management," was used, which did not appear in that form in the catalogue.

From an address given by Morrow at a Wisconsin meeting in 1896 we may get a glimpse of his outlook on some questions of an economic nature.[23] In that address Morrow noted the expansion of grain growing and the increase of the farm population in the North Central States. He observed that comparatively little human labor is used

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[19] Statement by a committee of the Board of Trustees of the University of Illinois, quoted in Allene Gregory's *John Milton Gregory, a Biography* (Chicago: Covici-McGee Co., 1923), p. 368.

[20] Illinois Industrial University, *Circular and Catalogue . . .*, 1868, p. 11.

[21] Illinois Industrial University, *Circular and Catalogue*, 1876–77, p. 24.

[22] University of Illinois, Board of Trustees, *Fourteenth Report* for the two years ending Sept. 30, 1888, p. 140.

[23] G. E. Morrow, "Our Farming, Its Changing Condition and Outlook," in Wisconsin State Agricultural Society, *Transactions*, 1886. 24:223–32, (Madison, 1886).

per acre in the newer agricultural areas, contrasted with that of older countries, and said:

The practice of intelligent men, free to choose, almost always has some good reason for it. Much of the criticism of our farming has been mistaken. The farmer of England criticises him of New England; the New Englander severely criticises him of the West; while the Illinois or Wisconsin farmer denounces the wasteful methods of his neighbor who has gone to the newer states, yet the practice in each locality is probably better for that locality, than would be that of the region from which the critics come. The danger is that farmers will be too conservative, and not readily enough recognize the changing conditions, which indicate the need for change in practice.[24]

With regard to the outlook for profits in farming Morrow said:

The competition in farming, both at home and abroad, is much more close and severe than ever before. With the improved means for transportation, the supply of farm products almost anywhere in the world, affects the demand in almost every other part of the civilized world. Pretty certainly there will be a narrower margin for profit in the future than in the past. Success will be more difficult, but it will mean more when secured.

We have had two great sources of profit in farming: first, rise in the value of the land; and second, profit on the production of farm crops. The first has been the chief source. Farm lands have advanced in price with great rapidity, but the rate of advance usually steadily becomes less, until it falls below a reasonable interest for the money value. In such case we must look to the second source for our profit, if we are to have any that is satisfactory.[25]

With keener competition and higher land values:

. . . we must make full use of all the capital invested. We must cultivate a larger percentage of all the land. . . . the labor of the farmer, his employees, his animals and his machinery should be made as constant as circumstances will permit.

Because live stock better enables the farmer to make profitable use of otherwise waste land and waste products; because they enable him to condense his surplus products, better fitting them for transportation; because they are the best security for retaining valuable fertilizing matter of the farm; because a good rotation of crops is most easily and profitably followed where they are largely kept; because they make it possible and necessary to have labor distributed reasonably equally throughout the year, I believe more and more attention should be given to the rearing, feeding and management of farm animals of the various classes.[26]

On the subject of landownership and tenancy Morrow said in his Wisconsin address:

It is inevitable that we must have a "landed class." Already it is difficult or impossible, over much of the country, for young men to become land owners. The area of desirable farm lands yet attainable as a gift or at low prices, is comparatively small and must be practically exhausted within a very few years. . . . The number and percentage of tenant farmers must certainly

[24] Morrow, "Our Farming," Wis. State Agr. Soc., *Transactions,* pp. 225–26.
[25] Morrow, "Our Farming," Wis. State Agr. Soc., *Transactions,* p. 226.
[26] Morrow, "Our Farming," Wis. State Agr. Soc., *Transactions,* p. 227.

increase. There will probably be more of partnership between capital and skill in farming than we have yet seen.[27]

Thus while Morrow had to cover the physical and biological aspects of farming as well as the economic, he had a comprehensive grasp of the elements of agricultural economics. This throws some light upon the probable content of the course in rural economy which Morrow taught and in which T. F. Hunt participated, first as a student, and later as an assistant. The Gregory tradition was not lost while those two men remained at Illinois.

Eugene Davenport

With the departure of G. E. Morrow in 1894 and the coming of Eugene Davenport, the courses in Rural Economy and the History of Agriculture disappeared from the catalogue and Comparative Agriculture was listed with the following description:

> Influence of locality, climate, soil, race, customs, laws, religion, etc., upon the agriculture of a country and incidentally upon its people. One crop only and its effect, as Rice, Indian corn in American agriculture and affairs. Varying conditions under which the same crop may be produced, as wheat. Statistical agriculture. Influence of machinery, and of land titles whether resting in the government, in landlord, or in occupant. Relation of agriculture to other industries and to the body politic. The agriculture of the world.[28]

The students liked Davenport's course on comparative agriculture[29] but there is no evidence that it carried the Gregory insight into the economics of agriculture.

Thomas F. Hunt

Thomas F. Hunt was a graduate of the University of Illinois who was definitely influenced by Gregory. He was a pioneer in agricultural college and agricultural experiment station work and was an all-round agriculturist who recognized the physical, the biological, and the economic aspects of farming. He was interested in soil and climate, plants and animals, farm management and markets.[30] He said:

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[27] Morrow, "Our Farming," Wis. State Agr. Soc., *Transactions*, p. 226.

[28] University of Illinois, *Catalogue*, 1894–95, p. 97.

[29] In a letter to H. C. Taylor, dated Mar. 13, 1947, H. C. M. Case, Urbana, Illinois, said, "Dr. W. L. Burlison . . . said it [the course on Comparative Agriculture offered by Dean Davenport] was one of the most stimulating courses he had ever taken. Dean Davenport had . . . traveled in South America and in England. He gave considerable descriptive information concerning the foreign countries with which he was acquainted and the different parts of the United States; then he proceeded to analyze the social, economic, climatic, and other features which affected the type of agriculture and the life of the people."

In a letter to H. C. Taylor, dated June 26, 1927, R. C. Ross, Urbana, Illinois, said, "Dean Davenport took up various sections of the United States, the Northeast, the West, the Upper Mississippi Valley, and the South, dealing first with the section in a broad way with respect to its resources and people and then dealing specifically with the systems of farming that had developed in relation to the resources and the people and why these had arisen. He was particularly good in pointing out the differences between regions and getting at the reasons for these differences."

[30] Hunt prepared 15 of the 26 chapters in *Soils and Crops of the Farm*, by G. E. Morrow and T. F. Hunt (Chicago: Howard and Wilson, 1892).

Agriculture is an economic production of living things. Agriculture, therefore, has two important aspects. One is that it deals with life. . . . The other aspect of agriculture is that it is commercial. . . . The emphasis in agriculture education must, therefore, be placed on biology and economics.[31]

Hunt made an historical approach to all aspects of farming. That gave him a sense of the dynamic forces to which the farmer has to adjust his activities. He viewed agriculture in its geographic setting, emphasizing the importance of the study of comparative agriculture as a background for recognizing the relativity of rules of good husbandry. The rules must fit the circumstances. The circumstances are determined by soil, climate, available equipment, labor supply, markets, etc. Furthermore, many aspects of the circumstances are subject to change. Depleted soils, invention of better equipment, the breeding of better plants and animals, increased or decreased labor supply, new or enlarged or even lost markets, better transportation, all have their influence on what to do and how to do it on a given farm at a given time. A change in any one of these circumstances may make necessary a readjustment in the farmer's plans for operating.

In his teaching, having emphasized history and geography to provide an attitude of mind, Hunt sent his students afield to study economic facts on specific farms. In that he was following the admonition of his favorite economist, John Milton Gregory, who urged that "the student should be required to observe carefully and report intelligently the economic facts of his own neighborhood."[32]

One of his students said of Hunt:

He held his students close to reality by bringing them in touch with conditions in the field involving the topic under study. Trips to study operating farms were a regular part of his method. He held the respect and regard of his students as well as of practical farmers, by virtue of his broad knowledge and good judgment.[33]

Hunt gave the student the task of taking an individual farm at a given time and place and figuring out a plan of operation. The plan was to take into account the physical, the biological, and the economic setting. In that setting the student was to plan crop rotations and livestock enterprises. He was to take into account capital and labor requirements. He was to include an estimate of expenditures and receipts and on that basis to calculate labor income. There was in Hunt's early teaching a definite foreshadowing of the budget method of farm management planning. The path followed by Hunt, the agronomist, "ran quite directly into the domain of agricultural education and subsequently to explorations in the then little-known realm of agricultural economics and sociology."[34]

[31] From manuscript lecture notes in files left by T. F. Hunt at the University of California, Berkeley. Published in the *Quarterly of Alpha Zeta,* 25(1):2 (February–March 1929).
[32] Gregory, *A New Political Economy,* p. 383.
[33] E. O. Fippen, "Dean Thomas F. Hunt: An Estimate, 12/9/1944," unpublished. In H. C. Taylor Archives.
[34] Editorial, U.S.D.A., *Experimental Station Record,* 56:607–09 (May 1927).

His participation in pioneer undertakings included a wide range of institutions from the East to the West, and across the water. He served in turn as Assistant in Agriculture at the University of Illinois through 1890, as Professor of Agriculture at the Pennsylvania State College in 1891, and as Professor of Agriculture and later Dean of the College of Agriculture at Ohio State University from 1892 to 1903. Then came four years as Professor of Agronomy at the College of Agriculture at Cornell University, whence Hunt returned to Pennsylvania State College as Dean of the School of Agriculture and Director of the Experiment Station from 1907 to 1912.[35] He was then called to the University of California as Dean of the College of Agriculture and Director of the Station. He was selected as one of the members of an agricultural commission sent abroad by the federal government in 1918, and in 1920–21 served as U. S. resident member of the permanent committee of the International Institute of Agriculture at Rome.

Hunt held the economic aspects of farming in his line of vision, along with the physical and biological aspects, when his contemporaries were, as a rule, failing to see the comprehensive picture of agriculture while focusing their attention upon soils, crops, or livestock. He held more than the material aspects in his line of vision. He recognized that the quality of a man was a factor in the financial success of a farmer. He said that "There are three important factors in placing persons in the upper one-fifth. These factors are intelligence, industry, and integrity."[36] Speaking of agricultural education, he said:

> If it accomplishes its purpose it teaches the student to think, to will and to do, and at the same time it furnishes him with that body of information which is essential to high measure of success in his chosen calling. . . . Throughout the course the student should realize the altruistic motive that is at the basis of agricultural research and education. He is a part of a mighty movement to create in the open country more effective and happier homes. He is a part of that great world movement by which every generation gives to each succeeding generation greater opportunities, more comforts and higher ideals.[37]

Whence came Hunt's creative insight? What forces made his mind so fertile, his life so fruitful in his chosen field? Biographical facts can be recounted, but it is indeed one thing to know the story of a man's life — quite another to explain him, to perceive fully the

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[35] Hunt had a sense of humor about the number of times he had changed from one institution to another, saying, in 1909, "There are sometimes advantages in having a man resign, provided you can offer enough to get a better man. I have myself rendered signal service in this direction to at least three institutions. Each has prospered immensely since I left it." See p. 17 of T. F. Hunt, "The School of Agriculture and Experiment Station in the Pennsylvania State College," an address given during Farmers' Week, Jan. 4, 1909. (Pamphlet, n.d., publisher not given.)

[36] From manuscript lecture notes, published in the *Quarterly of Alpha Zeta,* 25(1):6 (February–March 1929).

[37] *Quarterly of Alpha Zeta,* 25(1):2–3.

genius and the character that lie back of his activities. Hunt did more than any of his contemporary agriculturists to blaze the trail and to open the administrative minds in the colleges of agriculture for work in agricultural economics. When he went to Cornell in 1903 he helped Liberty Hyde Bailey set the stage for George F. Warren and the survey method of studying farm management. Hunt was such an important factor in creating the climate for the reception of agricultural economics in the twentieth century that it seems important to study the environment in which he spent his student years and his early years of teaching and research.

Hunt was an Illinois farm boy who, in 1880, in his nineteenth year, arrived at the Illinois Industrial University, Urbana, to study agriculture. Gregory had retired from the presidency but the atmosphere which he created was that in which Hunt started his career. Professor Morrow liked Hunt and employed him as his assistant in the management of the college farm.[38] Hunt graduated in 1884 and was assistant to the agriculturist, G. E. Morrow, and assistant agriculturist in the Illinois Agricultural Experiment Station until the end of 1890.[39]

Political Economy was a required study in the agricultural course in Hunt's senior year,[40] and had, as a matter of fact, been listed as a "collateral study" with Agricultural Economy (which included the History and Literature of Agriculture) in the very first announcement of courses in 1868.[41]

No definite statement has been found showing exactly what was included in *Agricultural Literature,* indicated in the course on the History of Agriculture that Hunt studied, but Gregory was a man of wide reading and deep appreciation of literary values, and even in the earliest days of the University attention was given to the literature of rural life. Hunt's early teaching reflected that atmosphere. At Ohio, required reading in his courses[42] included C. W. Hoskyns, Alphonse DeCandolle, R. E. Prothero, and Donald G. Mitchell's *Wet Days at Edgewood,* "the first attempt . . . at a literary history of the more readable writers on rural affairs. . . ."[43]

As Assistant in Agriculture, Hunt helped give the courses in

[38] See Illinois Industrial University, Board of Trustees, *Eleventh Report* for the two years ending Sept. 30, 1882, p. 176. Mr. Morrow's report of Mar. 3, 1881, stated, "I have engaged T. F. Hunt, a special agricultural student, to act as Foreman and Assistant on the Farm. . . . Mr. Hunt is young, but is well informed and experienced in practical farm work."

[39] The University of Illinois, *Catalogue and Circular,* 1885–86, p. [7] lists Hunt as Assistant in Agriculture, and the *Thirteenth Report* of the Board of Trustees of the University of Illinois for the two years ending Sept. 30, 1886, carries several pages (196–200, 204–209) of "Farm Papers" by T. F. Hunt on such subjects as grain yields, potato culture, and pig feeding. The same *Thirteenth Report,* p. 93, carries "Proceedings of the Board . . . March, 1886," which presents a report from the Director of the State Laboratory of Natural History which speaks of Hunt as a laboratory assistant as of that date. *Who Was Who in America,* 1:608, indicates that Hunt was assistant to the State Entomologist in 1885–86 and assistant in agriculture, 1886 to 1891.

[40] Illinois Industrial University, *Catalogue and Circular,* 1883–84, p. 37.

[41] Illinois Industrial University, *Catalogue and Circular,* 1868, p. 11.

[42] Hunt, *Lectures on the History of Agriculture and Rural Economics,* p. 145.

[43] Illinois Industrial University, Board of Trustees, *Third Annual Report,* 1869–70, p. 218.

agriculture, particularly when Professor G. E. Morrow was away from the college.[44] While the catalogue description of the courses in "Rural Economy" and "History of Agriculture" remained much the same from 1876–77 through 1890–91, the reports on teaching methods and aims during the period when Hunt was assisting Morrow show a growth in ideas and ideals. In September 1886, the report on the teaching of Rural Economy stated, "In this study an attempt is made to apply leading principles of political economy to the management of a farm."[45] Then again in 1888, "More importance is attached to presenting principles, with a sufficient number of facts to illustrate these, familiarizing the student with available sources of information and with methods of using these, than to teaching arbitrary rules of practice."[46]

There is evidence that John M. Gregory wielded a profound influence upon Thomas F. Hunt, particularly through Gregory's book on political economy, copyrighted in 1882.[47] President Gregory's great interest in political economy, his appreciation of the economic as well as the physical and biological aspects of agriculture, helped to shape the early agricultural work at Illinois. As indicated by the dedication, his book was the outgrowth of his ten years of teaching the subject.[48] The influence of the chapter on "Agriculture or Rural Economy" is reflected in both Morrow's and Hunt's teaching and also in their experimental work. In Morrow's paper on cattle feeding and management,[49] the experiments described are distinctly economic in character. Though Hunt left Illinois, he carried with him the imprint of the Gregory influence. In his class lectures he showed great familiarity with Gregory's *A New Political Economy* and drew the general principles of economics, especially the theory of value, directly from that work.

When Thomas F. Hunt went to the Pennsylvania State College of Agriculture in January 1891, as Professor of Agriculture, he thoroughly "re-cast" the work in agriculture.[50] He gave a course three

[44] University of Illinois, Board of Trustees, *Fourteenth Report* for the two years ending Sept. 30, 1888, p. 134, states: "So much absence of Professor Morrow [for attending Farmer's Institutes which the State Board of Agriculture conducted within the state] could not have been permitted but for the good service rendered by assistant T. F. Hunt, who is proving an excellent man in both the class room and the field. The bulletins describing his work during the past year, indicate practical ability of a high order, and skill in devising and performing agricultural experiments."

[45] University of Illinois, Board of Trustees, *Thirteenth Report* for the two years ending Sept. 30, 1886, p. 142.

[46] University of Illinois, Board of Trustees, *Fourteenth Report* for the two years ending Sept. 30, 1888, p. 139.

[47] Gregory, *A New Political Economy.*

[48] Gregory, *Economy,* p. 3. "This volume is affectionately dedicated to the several hundreds of former students for whom its studies were undertaken, and to whom, in the author's annual courses of lectures, its chief parts were first presented.

"The heart of the author has followed his pupils out into their various careers of honored usefulness, and now sends after them, this publication, so often requested by many of them, as a token of his continued regard for their welfare, and his continued faith in the great doctrines of public well-being which he attempted to inculcate. . . ."

[49] G. E. Morrow, "Cattle Feeding and Management," in University of Illinois, Board of Trustees, *Thirteenth Report* for two years ending Sept. 30, 1886, pp. 209–10. (Authorship indicated in Table of Contents. T. F. Hunt may have been joint author.

[50] See Pennsylvania State College, *Catalog,* 1891, 1892, p. 13.

hours a week in the fall term in Rural Economy and also offered a course in the History of Agriculture.[51] In his class work in rural economics he included a small project on cost of production. That was referred to several years later in his class lectures at Ohio.[52] During that one year (1891) at Pennsylvania State College, Hunt not only taught classes but also worked under Director H. P. Armsby as a member of the staff of the Agricultural Experiment Station. Armsby was then an outstanding figure in the field of animal nutrition. Hunt conducted an experiment, the purpose of which was to determine "at what stage of ripeness to cut an acre of corn for fodder to produce the most butter fat." Results of the experiment were stated as follows: "A given area of corn fodder cut when the kernels of the ears were mostly dented, but with the husks and leaves mostly green, produced more butter fat than an equal area when cut earlier or later."[53] In the same Annual Report, Director Armsby had an article in which he stated:

> As the corn crop approaches maturity, there is a very rapid increase in the yield of dry matter per acre, while the digestibility of this dry matter appears to *increase* slightly, rather than to decrease as in the case of other crops. The yield of *total digestible food* by the fully mature crop was from two to three times as great as that by the same variety in the silking stage, and (in 1892) thirty-six per cent greater than at the time the ears were glazing.[54]

Noting the discrepancy between Hunt's findings and his own, Armsby inserted the following comment in a footnote to Hunt's article:

> It will be observed that this result apparently does not agree with the conclusions drawn from the experiments detailed in the previous article upon the food yield of forage corn. It is to be observed, however, that Prof. Hunt's results do agree with those previously given in showing the greatest yield of dry matter per acre in the mature corn. The apparently greater feeding value of the medium-mature corn, it seems most likely, is connected with its somewhat greater palatability. The numerous experiments on record leave no doubt as to the greater food yield by mature corn. How far this is offset in practice by the greater palatability of the younger corn, or by other unknown conditions, must be left for future experiments to be finally determined.[55]

There were differences in the experimental methods used by

[51] Pennsylvania State College, *Catalog,* 1891, 1892, pp. 17 and 20, describes those two courses as follows: "Rural Economy. Farm management and plans; kinds of farming, as general, special, intensive, extensive, stock, dairy and grain, and the essential elements of success in each; farming as a business; marketing; relation of farming to other industries; the farmer as a producer, manufacturer, merchant, transporter and consumer.

"History of Agriculture in those countries from which we derive our agricultural practices and products; American agriculture; present agricultural methods in foreign countries."

[52] Hunt, *Lectures on the History of Agriculture and Rural Economics,* p. 137.

[53] T. F. Hunt and W. H. Caldwell, "Experiments with Corn Fodder," in Pennsylvania State College, *Annual Report,* 1892, pt. 2, "Agricultural Experiment Station," pp. 34–35.

[54] H. P. Armsby, "The Food Yield of Forage Corn," in Pennsylvania State College, *Report,* 1892, pp. 23–24.

[55] Armsby, *Food Yield,* p. 35.

Armsby and by Hunt which should not be overlooked. Armsby was using chemical criteria while Hunt was using economic criteria.[56]

After one year at Pennsylvania State College, during which he performed his duties "most acceptably and in a manner calculated to strengthen the work,"[57] Hunt responded to a call to go to the Ohio State University in January 1892 as Professor of Agriculture and Head of the Department of Agriculture. He took over all of the courses which had been taught by Professor Townshend excepting Pathology and Therapeutics. The courses Townshend had offered included one entitled Advanced Agriculture, catalogued (without description) for the first time in the year 1891–92.[58] The following year (i.e., Hunt's first year) that course was described as: "Advanced Agriculture. . . . Rural Economy. The business of farming, past and present. Four times a week. Professor Hunt."[59] No evidence has been found to indicate that any instruction had been given in agricultural history or rural economy at Ohio State University prior to Hunt's arrival.[60] Three men took the degree of Bachelor of Agriculture in 1892.[61] Within the first year the Board of Trustees of Ohio State University reported that "During the few months he [T. F. Hunt] has been in charge, he has justified the wisdom of his selection, and has succeeded in infusing the department with new life and vigor."[62]

After five years, and coincident with the beginning of Hunt's work on the Committee of the American Association of Agricultural Colleges and Experiment Stations on Methods of Teaching Agriculture, the course was more definitely outlined as follows:

> History of Agriculture and Rural Economics. Lectures and recitations upon the history of agriculture; present agricultural methods in various countries; cost and relative profits of various farm operations and systems. Four times a week. Third term.[63]

This same description was repeated year after year while Hunt was at Ohio. The course was required of all students in the agricultural department. At the same time two terms of general economics were made a requirement for all senior year agricultural students.[64]

Hunt gave other courses in which he included economic and historical aspects of agriculture. In his course on Farm Equipment he included "selecting, planning and equipping farms." In his course on Farm Crops he included "the history, production, marketing,

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[56] On the question of what further experiments have shown on that subject, Frank B. Morrison, of Cornell University Agricultural Experiment Station, in a letter to H. C. Taylor dated Jan. 27, 1947, stated, "recent investigations have shown that Professor Hunt's conclusions with reference to the stage at which the corn crop produces the most milk, are more correct than the statement by Dr. Armsby. . . . The Wisconsin investigators advise ensiling the crop just about when Hunt recommended — when the kernels are mostly dented."

[57] Pennsylvania State College, *Report*, 1891, pt. 2, p. 13.

[58] Ohio State University, *Catalogue*, 1891–92, p. 42.

[59] Ohio State University, *Catalogue*, 1892–93, p. 39.

[60] Ohio State University, *Catalogue*, 1890–91, p. [9], 39 shows Norton S. Townshend, M. D., as Professor of Agriculture.

[61] Ohio State University, *Catalogue*, 1892–93, p. 115.

[62] Ohio State University, Board of Trustees, *Annual Report*, 1892, p. 18.

[63] Ohio State University, *Catalogue*, 1896–97, p. 98.

[64] Ohio State University, *Catalogue*, 1896–97, p. 50.

cultivation, and harvesting of farm crops."[65] In connection with the above catalogue descriptions of his courses, his later description of the functions of a Professor of Agriculture is illuminating:

> . . . What should a professor of agriculture teach? The following . . . statement may help us understand the scope of the instruction that may be given: (1) Processes of agriculture, (2) Description of varieties, (3) History of agriculture, (4) Comparative agriculture, (5) Agricultural statistics, and (6) Rural economy.
>
> By comparative agriculture, is meant the agriculture of other countries as it exists to-day in comparison with our own.
>
> Everyone interested in agriculture should have some intelligent understanding of the proportions of the industry and its relation to other occupations; hence the importance of agricultural statistics. The processes of agriculture, that is to say, the methods of producing plants and animals, including the necessary equipment and machinery for their production, you have already studied. You have also studied the varieties of plants and animals used in agriculture. As yet, however, we have barely touched upon the history of agriculture.
>
> It was Goethe who said, "No one ever knows his mother tongue until he knows something of a foreign language." This is a fundamental psychological fact. One is conscious of his existence only through contact with external things. We know the size of an object only by comparison with others of known size. We know our own capabilities only by comparison with those of others; only by being matched by a foeman worthy of our steel. If, as claimed, one cannot have a proper knowledge of philosophy without a thorough study of the history of philosophy, then the student of agriculture cannot have a proper knowledge of agriculture without the study of history of agriculture.
>
> No attempt will be made in the lectures which follow to give a complete history of agriculture, but the purpose is to follow briefly that stream of civilization of which we are universally recognized to be a part.[66]

As to the content of Hunt's course on the History of Agriculture and Rural Economics there is, fortunately, a printed record.[67] In the spring of 1899 the students in Hunt's class asked permission to have the lectures printed. One hundred copies were printed by them. In the preface to the printed lectures, Hunt stated:

> It has been the practice of the writer to give a brief course of lectures on the History of Agriculture to Junior and Senior Students in the Four-Year Course in Agriculture in order to cement together the reading in the library which they are required to do. (Appendix A). A still briefer course of lectures has been given on rural economics in order to help the students in working out a plan in farm management.

It would seem that Hunt looked upon the history of agriculture as the background in terms of which to better understand modern agriculture in all of its aspects, physical and biological, as well as economic. Hunt presented a brief sketch of the agriculture of Egypt, Greece, Rome, Great Britain, and the United States. He required

[65] Ohio State University, *Catalogue*, 1896–97, p. 97.
[66] Hunt, *Lectures on the History of Agriculture and Rural Economics*, p. XI–XII.
[67] Hunt, *Lectures on the History of Agriculture and Rural Economics*, pt. 1, "History of Agriculture," pp. 15–121, and pt. 2, "Rural Economics," pp. 122–50.

his students to read 25 pages per lecture from a selected list of books.[68] In taking that course, the student not only got a broad background of information in terms of which to think about the agriculture of his day, but he also consciously or unconsciously got a feeling and some measure of understanding of the dynamic character of agriculture. This is of great importance, for when one takes the short-time view of farming, the survey of a given area in a given year, for example, one is in danger of assuming static conditions. This may lead to the drawing of conclusions of but temporary value and leave the farmer without an understanding of the principles to be followed in adjusting his farming to changing conditions either with respect to the means of production or the marketing of his products. Hunt's emphasis upon the history of agriculture as a part of the training of students of agriculture was well founded.

While Part II, on Rural Economics, is much shorter than Part I, dealing with the History of Agriculture, it is significant for its originality in introducing a method of studying farms which later came into general use. The formal approach to economics is found in the introduction to the volume. In that the influence of J. M. Gregory on Hunt's thinking is clearly shown. Hunt's discussion of value summarized Gregory's presentation of that subject, and Hunt's "forms of work" and discussion of classes of agriculture are based directly on Gregory.[69]

In the general treatment of rural economics, Hunt emphasized the importance of fitting the type of agriculture to the soil, climate, topography, location with respect to markets.[70] He noted that the value per pound of the product and the perishable or nonperishable character of the product were important factors in determining where, with respect to markets, they could be produced profitably. Attention was called to interregional competition upon the choice of farm enterprises on a given farm in a given region. Hunt did not define rural economics, but it is evident that it was the economics of farm management he had in mind. That is shown in this paragraph:

> In the production of articles of value; or in considering the economy of production, the farmer has two factors to consider; the gifts of nature on the one hand and on the other the labor and capital employed. Speaking broadly profit in farming as well as wise and economical farm management depends upon natural and artificial conditions. Artificial conditions are population, civilization, markets, etc. Wise farm management consists in adapting ourselves to these conditions and also in leading in necessary changes. We should not try to raise wool on fertile river bottoms nor corn on hill tops.[71]

From those economic considerations in farm management based upon general outside considerations, Hunt passed to the internal

[68] Hunt, *Lectures,* p. 146.
[69] Compare Hunt, *Lectures,* pp. VI, VIII, XI, with Gregory, *A New Political Economy,* chaps. I and III and pp. 207, 208.
[70] Hunt, *Lectures,* p. 122.
[71] Hunt, *Lectures,* p. 122.

problems of operating a farm. The farmer's capital requirements were considered and compared with those of the cotton manufacturer.[72] Under mistakes in the use of capital, Hunt discussed the amount of land to be associated with given labor and equipment and thus introduced the problem of the degree of intensity of culture in a given line of production which would yield maximum profits to the farmer.[73] He mentioned too much fencing, idle machinery, the use of low efficiency livestock, and lack of a full time – 300-day – program for farm labor as other mistakes in the use of capital.[74] A comparison of Hunt's discussion under the side heading "Mistakes in use of capital,"[75] with Gregory's discussion under the side heading "Economic mistakes,"[76] shows how well Hunt had studied Gregory's book and also how completely he had made the thinking his own.

Hunt then pointed out the economic advantages and disadvantages of grain farming and truck farming, the one representing an extensive type of farming with nonperishable products, the other an intensive type of land use with perishable products. Hunt gave four advantages and seven disadvantages of grain farming, ending with the observation that in grain farming:

> Too much depends upon natural forces and there is not enough scope for skill. Skill means the capacity to do something difficult. . . . The farming that requires the most skill pays the best if you have the skill to apply to it.[77]

In the "Purpose and Advantages of Keeping Livestock" Hunt emphasized the food supply for the home, utilization of land and farm products which would otherwise be wholly or partially unutilized for profit, condensing of the products of the fields for cheaper marketing, retention of fertility on the farm, opportunity to employ greater skill, the continuous use of labor and equipment throughout the year where grain and livestock farming were combined. Under disadvantages, Hunt mentioned: large capital requirements, danger of loss from disease, impossibility of holding products indefinitely for a better market, competition of the farmer with the rancher. It seems clear that Hunt favored a combination of crop and livestock farming with great care to select enterprises to be combined with an eye on competing farmers of other regions and availability of markets, as well as the local situation with respect to soil, climate, topography, labor, capital, and the farmer's personal qualifications with respect to skill and managerial ability.[78] Hunt discussed costs of producing the principal Ohio crops, of producing livestock, and of maintaining work horses.[79] While he gave in his lectures a general orientation to problems of farm management, an important part of the work

[72] Hunt, *Lectures*, p. 125.
[73] Hunt, *Lectures*, p. 126.
[74] Hunt, *Lectures*, p. 127.
[75] Hunt, *Lectures*, pp.126–28.
[76] Gregory, *A New Political Economy*, pp. 224–27.
[77] Hunt, *Lectures*, p. 133.
[78] Hunt, *Lectures*, pp. 139–42.
[79] Hunt, *Lectures*, pp. 135–38, 142–44.

assigned to the student was a case study. Each student was required to make a report upon the management of a farm, the report to be made in accordance with the following outline:

1. The general character of the farm productions including the rotation of crops and the acres of each. State acres of (a) tillable land, (b) pasture land, (c) land covered with buildings and yards, (d) land in gardens and orchards.
2. Itemized statement of capital employed using subdivisions to be hereafter given.
3. Itemized statement of average estimated receipts and disbursement for the year, and show net profit and interest upon investment.
4. (a) Itemized statement of estimated cost per acre of raising, harvesting, storing, and marketing four principal farm crops raised. (b) Give annual cost of maintaining work horses with estimated number of days used.[80]

Beginning in 1895 Hunt was for more than 15 years an active and influential member of the Committee on Methods of Teaching Agriculture[81] of the Association of American Agricultural Colleges and Experiment Stations. The first report of the committee, made in 1896, suggested the following subdivisions of the subject matter of agriculture in college teaching, and the second report (1897) allocated the time:

	Hours
1. Agronomy, or plant production	132
2. Zootechny, or animal industry	162
3. Agrotechny, or agricultural technology	72
4. Rural engineering, or farm mechanics	60
5. Rural economics, or farm management	60
Total	486

In the fifth report (November, 1900) the committee presented a syllabus of rural economics and defined the subject as follows:

> Rural economics treats of agriculture as a means for the production, preservation, and distribution of wealth by the use of land for the growing of plants and animals. It may include the development of agriculture as a business (history of agriculture), as well as the facts and principles of farm management under present conditions.

The syllabus included:

- History of Agriculture
- Farm Management
  - Capital
    - Land
    - Equipment
  - Labor
  - Production
  - Marketing
  - Records and accounts

[80] Hunt, *Lectures,* p. 152.
[81] Also known as Committee on Instruction in Agriculture.

A. C. True spoke of these reports as being:

. . . tentative and crude in many particulars and represented in the usual way compromises of statement growing out of differing views of members of the committee, they laid the foundation for a wide discussion on agricultural courses in the colleges and did much to strengthen the position of the teachers of agriculture as distinct from the sciences related thereto. They also helped to increase the specialization of agricultural instruction, enlarge the agricultural faculties, and secure more ample equipment of buildings, land, livestock, apparatus, etc., for this work. Agriculture as a subject of college instruction was thus helped to outgrow its subordinate place in the curriculum, and the agricultural course became much more than the teaching of the relations of the sciences to agriculture.[82]

Hunt's work on the committee on teaching gave him opportunity for insight into the needs of the agricultural colleges and experiment stations and the importance of raising the standards of agricultural teachers and research workers. It is recorded that while he "was attending the convention of the Association of American Agricultural Colleges at San Francisco, Calif., in July, 1899, it occurred to him that it would be a good plan to organize a graduate school of agriculture.

"This proposition met with the approval of President W. O. Thompson, of the [Ohio State] university, and on his recommendation the trustees in April, 1900, took action in favor of the establishment of such a school."[83]

Hunt's relationship to the results of the discussion on rural economics and farm management at the fourth session of the Graduate School held at Ames, Iowa, in 1910, and his outstanding contributions to the subject as chairman of the Committee on Methods of Teaching, will be discussed on pp. 90–96.

George T. Fairchild

George T. Fairchild, at Michigan and later at Kansas, taught economics in a manner to open the minds of outstanding students, such as L. H. Bailey, to the need of work in agricultural economics. In writing of Fairchild, Bailey said:

In my college days at the Michigan Agricultural College,[84] George T. Fairchild was Professor of English Literature and Librarian.[85] He was an able man of wide interests and sound scholarship. He gave a course in what was then known as political economy. The reference works were those of Adam Smith, Mill, Fawcet, Cairnes, Walker, Wayland, Perry, Bowers, Carey, Thompson. I was fascinated by his lectures and by the reading. I remember particularly the impressions made on me by Adam Smith, John Stuart Mill, and Francis Wayland. As I recall the course, Wayland's *Elements of Political*

[82] A. C. True, "A History of Agricultural Education in the United States, 1785–1925," U. S. Department of Agriculture, *Miscellaneous Publication* 36 (Washington, 1929), pp. 218–19. See also committee reports No. 1–5, 8, in U. S. Department of Agriculture, Office of Experiment Stations *Circulars* 32, 37, 39, 41, 45, 55, 69, and 115 (Washington, 1896–1912).

[83] True, *History*, p. 233.

[84] Bailey entered Michigan in 1877, was out one year, and graduated in 1882.

[85] Fairchild left Michigan in December, 1879, to become President of the Kansas Agricultural College.

Economy was used at least part of the time as a text. I recall that I raised questions as to why agriculture was not represented more fully in the statements and examples, but there were no standard references to such information at that time.[86]

Fairchild's *Rural Wealth and Welfare* was published in 1900.[87] He stated:

> The subject of the following pages is wealth, how it is accumulated, how distributed to individual control and how finally consumed for the welfare of all concerned. But special reference is made to the sources of wealth as a means of welfare in rural life, and to the bearing of definite economic principles upon farming, especially in these United States of America.[88]

That book was reviewed in 1901 by M. B. Hammond as follows:

> The title of Dr. Fairchild's book, "Rural Wealth and Welfare," the experience of its author who for thirty-five years has been connected with agricultural colleges, and the place of the treatise in "The Rural Science Series," all would lead one to expect that the book was a treatise on agricultural economics, for which there is at present a genuine need. It is extremely disappointing, therefore, to find that Dr. Fairchild's book is only another treatise on elementary economics. . . . He is wise in his insistence on the value of accurate crop statistics to the agricultural class, and points out that such information would "do more to destroy the demoralizing force of mere speculation than any possible legal enactment." . . . Fairchild takes an optimistic view of the drift of the farming population into the cities. He considers this merely a means of readjusting industrial arrangements, and one which is made possible and necessary by the wide use of agricultural machinery which has enabled three men to do the work that fourteen did forty years ago. Even the abandonment of New England farms he does not consider a great social loss, though it may have injured individuals. "These lands will find a profitable use in the wood lots throughout the East and in grazing ranges through the West, with slight permanent loss. They are not signs of poverty but of a developing trait, just as the abandoned country woolen mills tell the story of immense growth in factory methods."[89]

If his *Rural Wealth and Welfare* indicates the scope of Fairchild's thinking, he ventured little beyond the boundaries of the conventional classical economics of his time. With the development of specialized work in farm management, land tenure, farm credit, and marketing, Fairchild's book on *Rural Wealth and Welfare* was passed by and forgotten. It had in it, however, some significant references to the human element in farming which, if understood and taken seriously by the younger men of the early decades of the twentieth century, might have greatly improved the effectiveness of their work. The following quotations from *Rural Wealth and Welfare,* too long overlooked, may now serve as a starting point in seeking the answer to the puzzling question, "Why the wide differences in the labor incomes of farmers?"

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[86] Letter from L. H. Bailey to H. C. Taylor, July 18, 1939.
[87] G. T. Fairchild, *Rural Wealth and Welfare* (New York: The Macmillan Company, 1900).
[88] Fairchild, *Rural Wealth,* pp. 3–4.
[89] M. B. Hammond, Review of Dr. George T. Fairchild's book *Rural Wealth and Welfare,* in *The Dial,* 30:234–35 (April 1, 1901).

The farmer who lies awake nights to plan his year's work so that he may have the largest returns for his undertakings in marketable products, gives the same kind of effort as the inventor. A good name for this is speculative labor — an exertion to foresee and provide for future needs of society. . . .

. . . *That form of exertion which has done most to meet the world's wants is speculative labor.*

A capital illustration of speculative labor, productive in the highest degree, is the invention of reaping machinery. The inventor has gained riches by his contrivance, but the world has gained far more by his foresight and ingenuity. Similar energy has been put into all labor-saving machinery, and still plays an important part in devising the best uses for it.

Every farmer has a similar need of planning for every field he plows. There is a certain draft for each horse, a certain speed for the plow, a certain adjustment of harness to the team, which gives a full return for the force employed. A failure to find this causes waste. All the effort of scientific research into causes and conditions of growth or disease of plants and animals is speculative labor, out of which the next advance of agriculture must come. The mere operative power of a laborer can be supplanted by brute force or by machinery, but nothing can ever supplant the intelligent foresight that invents, plans and devises the end to be reached, and the ways and the means for reaching it.

The very foundation of any success in farming is clear foresight and distinct planning for a succession of crops, each to be tended, harvested, stored and marketed in the very nick of time. The best energy of every farmer is properly given to finding what crop to raise, how and when to have it ready for the world that is going to need it. He best meets his own daily wants when "Mr. Contrivance" stands by him in all his efforts. This contrivance is the chief exertion of a successful farmer's life. . . .

If this extra exertion takes the form of training muscles, nerves, and brain to act with speed and accuracy as judgment directs, we call the attainment *skill*. . . .

Education serves the same purpose by acquisition of knowledge in such ways as to give wisdom in its application. It involves an exercise of intelligence to the establishing of sound judgment. Broader than skill in its range, it increases the possibilities of skill as storage of power. . . .

Just as important, though often overlooked in enumerating economic forces, is the acquired personal habit of self-control. Without it both skill and education avail but little, and it may do its work independently of both. . . .

The character of the workman, the tradesman and the farmer enters more or less into the product of his toil and gives it value. . . .

All these personal attainments, whether confined to individuals or extended over whole communities, must be reckoned among producing powers and reckoned within estimate of earnings. . . .

. . . As no conceivable device can make a babe as efficient as a man, so no contrivance, political or social, can make an undeveloped man equal to a fully developed one.[90]

Thus it would seem that Fairchild would improve farm management by improving the qualities of farmers. A study of man as a factor in production along lines suggested by Fairchild may lead to the re-shaping of agricultural research and extension work to include an emphasis upon farmer improvement as a starting point for soil

[90] Fairchild, *Rural Wealth*, pp. 35–37, 46–48, 53.

improvement, seed improvement, breed improvement, and more efficient methods of marketing. Belated but important beginnings along this line have been made. They will be discussed in a later chapter.

Isaac P. Roberts

In the first outreach toward some consideration of the economic aspects of agriculture, Cornell University and the University of Illinois were closely parallel in time. The catalogue of the Illinois Industrial University for 1868 has already been quoted as showing a course in Agricultural Economy (cf. *supra,* p. 58). The Cornell University catalogues for several years beginning with 1868 stated that in the College of Agriculture:

> It is intended that the lectures and exercises shall comprise, in their fullest extent, the following subjects. . . . 7. The *Economics of Agriculture,* including the sequence of agricultural operations, the economical division of labor, the rotation of crops, the improvement of the soil by manuring, draining and liming; farm engineering and construction, general agricultural policy, and the management of landed property.[91]

Even though the term "Economics of Agriculture" was used, there is no evidence to support the idea that much of what later was connoted by the term was embodied in the lectures. However, Isaac P. Roberts certainly was among the early men who gave attention to the economic aspects of farming. Roberts was at the head of the work in agriculture at Cornell from February 1, 1874 to June 19, 1903. His major contributions were in farm accounting and the general philosophy of farm life. "He interpreted agriculture in terms of living."[92]

In writing of Roberts' work at Cornell University, George F. Warren said:

> He taught practically no farm management except cost accounting, but developed and taught a course on farm accounting. This system was developed on the college farm. So far as I know, he never applied it on any farmer's farm. . . . A daily work report for man and horse labor was used. His system furnished the inspiration for starting the system of farm accounting which began in New York in 1907 and which has continued without interruption since that date. It furnished a number of ideas which are still in use.[93]

George N. Lauman said, "Roberts taught me agriculture — it was not genetics, it was not rural economics — there was lots of ethics in it."[94] Roberts' system of farm accounting in the form in which he taught this subject in his later years at Cornell may be found in *The Farmer's Business Handbook.*[95] The subtitle states that it was

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[91] Cornell University, *Register,* 1868–69, pp. 56–57.
[92] E. H. Thomson, in an interview by Anne Dewees, Nov. 26, 1939.
[93] G. F. Warren, "The Origin and Development of Farm Economics in the United States," *Journal of Farm Economics,* 14:3 (January, 1932).
[94] In an interview by Anne Dewees, Nov. 16, 1939.
[95] I. P. Roberts, *The Farmer's Business Handbook,* (New York: The Macmillan Company, 1903), pp. 1–142.

"a manual of simple farm accounts and of brief advice on rural law." It ran into many editions.

Frank A. Fetter

Roberts had been at Cornell twenty years and Bailey had been there six years when Frank A. Fetter was brought to the Department of Political Science in the fall of 1894.[96] He recalled the event:

> L. H. Bailey and J. W. Jenks wanted me to come to Cornell. In fact they cabled me while I was in Germany in 1893, but I declined at that time, then came for the year 1894–95. From January to April, 1895, I gave a course in agricultural economics. I do not remember whether or not it was actually called "agricultural economics." For materials I used the census of 1890 and some German books. I taught the general principles of land rent, and I discovered that the old Ricardian theory wouldn't work. Giving that little course influenced my thinking more than almost anything else. My course was, I think, pretty much on the ground, but still I also tried to give some theory. I got geography of production — also quantity of production.[97]

The course was given in the political economy group and is listed in the President's report as "Economics of Agriculture," with a reported attendance of six students.[98]

No such course had been listed the year before Fetter gave his course, but in 1895–96 C. J. Bullock, instructor in Political Economy, offered a similar course which was described as including a treatment of "the subjects of land tenure, rent, depopulation of the rural districts, agricultural cooperation, land banks, agricultural insurance, forestry."[99] The President's report for that year indicates an attendance of only three students[100] and we find no records showing other courses of that kind offered at Cornell until 1902.

Willet M. Hays

Willet M. Hays was the first of three men[101] who, under the influence of Professor Bruce E. Shepperd of Drake University, Des Moines, Iowa, transferred from Drake to the Iowa State College, at Ames, to study agriculture. Professor Shepperd was a stimulating teacher. He taught men to think. He defined thinking as "seeing the relations of things." He recognized that to see the relations of things one must have knowledge of the things — the knowledge that comes from experience and observation as well as that which may come from instructors and books. Professor Shepperd gave generous personal attention to his students. He led each student's thinking along paths in some measure illuminated by the personal experience of the student. When he found a student whose thoughts automatically

[96] Fetter went to Indiana in 1895, to Leland Stanford in 1898, and did not return to Cornell until 1901.
[97] Statement made by Frank A. Fetter to Anne Dewees in personal interview, Dec. 28, 1939.
[98] See Cornell University, *Annual Report of the President*, 1894–95, p. 102; see also Cornell University, *Register*, 1894–95, p. 81.
[99] Cornell University, *Register*, 1895–96, p. 84.
[100] Cornell University, *Annual Report of the President*, 1895–96, appendix V, p. xxxiv.
[101] The other two men were H. C. Taylor and John H. Shepperd (a brother of Bruce E. Shepperd).

turned to agriculture and the problems of the farmer and of rural life, he helped that student in planning his work so as to obtain basic training in language, mathematics, and history at Drake and then advised him to go to Ames for training in the basic sciences relating to agriculture.

Hays was a student at Drake University in the year 1882–83. He graduated from the course in agriculture at the Iowa State College in 1885, just one year after T. F. Hunt graduated from the course in agriculture at the University of Illinois. Hays tarried one year as assistant in agriculture at Ames, spent a year as associate editor of the *Prairie Farmer,* and then became Associate Professor of Agriculture in the Agricultural College, and Agriculturist in the Agricultural Experiment Station of Minnesota. With the exception of one year spent at the North Dakota Agricultural College (1892–93), Hays was at the University of Minnesota from 1888 through 1904. He was an inspiring teacher and an untiring experimenter whose mind reached far ahead of his time in laying plans for research and education. His interests were as broad as agriculture and rural life, but he focused his attention especially upon finding and producing better plants and figuring out the combination of crops, in systems of rotation, which would yield the farmer maximum long time net returns.

Hays' interest in crop rotation led him to give much attention to planning the layout of the farm with the number, size, and shape of fields best suited to the rotation of the chosen crops. His interest in the choice of crops with a view to combining in the rotation those crops which would enable the farmer to obtain the highest long time net return from his farming operations led to an interest in cost accounting.

Hays' agricultural philosophy was comprehensive. It included the physical, the biological, the economic, and the social aspects of agriculture and rural life.

That Hays was ever conscious of the fact that the starting point in improving agriculture is the improvement of the abilities of men is clearly indicated in the following quotation from a bulletin of which he was senior author:

> The necessity of knowledge, wisdom, and skill in farm management can not well be overestimated. A European agricultural society found that on many farm estates for which it kept accounts, and for each of which long experience had established true invoice valuations, the net profits were determined mainly by the individual abilities of the respective managers, the net result on the investment ranging from a profit of 12 per cent down to a loss of 3 per cent and averaging 3 per cent profit. In every farm neighborhood there are examples of men who make a marked success, others who as markedly fail, and still others of all gradations between success and failure, depending far more on the differences in men than on differences in land or in materials, or opportunities, or other conditions.[102]

[102] W. M. Hays, Andrew Boss, A. D. Wilson, and T. P. Cooper, "Farm Management: Organization of Research and Teaching," Minnesota Agr. Exp. Sta. *Bulletin* 125 (University Farm, St. Paul: 1912), p. 7. Also published as U. S. Department of Agriculture, Bureau of Plant Industry, *Bulletin* 236 (Washington, 1912).

The work started at Minnesota before the turn of the century by Hays, with Andrew Boss at his side, became of outstanding importance in the development of agricultural economics in the first three decades of the 1900's.

In speaking of the development of farm management work at Minnesota Andrew Boss said:

> The growth of farm management work in Minnesota was just a normal and continual expansion of trying to get at a statistical analysis of what goes on on the farm. *Farm development* was the name of one of the first courses given in farm management. Farm management here grew out of agronomy. Very early there was emphasis on the economic side of agriculture at Minnesota. In the 1880's and 1890's we were still suffering from the Civil War depression. Farmers were having hard times. Farmers were wondering what to grow. Many people were trying to get at cost and profit, income and expense.
>
> As early as 1891 W. M. Hays and I talked about costs and said that we must get figures. Of course, cost studies were not original with us — Cato makes reference to such. English farmers very early tried to know costs and reduce them. George Washington and other early American farmers kept expense records and studied costs and returns. We felt specifically that we should know comparative costs, methods of reducing costs, how to increase profits, and the wisdom of shifting production, and we thought our route studies would be the very way to get the information. We wanted to know the cost of production so as to decide which crops the farmer should raise. I was always thinking and asking what would be most profitable. There was no thought or talk of price control.
>
> I began to teach farm management in 1896 in courses called Farm Development and Farm Crops. In the early days the term "farm management" at Minnesota meant pretty largely crop rotation. We studiously kept away from giving advice to the farmers. We never had a paternalistic attitude. We always looked to the future. I for one have never been able to become very much interested in history. I would rather cut wood for a fresh fire than to carry out the ashes from an old one.[103]

William A. Scott

Richard T. Ely was invited to the University of Wisconsin to become Director of the School of Economics, Political Science, and History which was opened in 1892–93. His interest in the development of the economic aspects of agriculture and forestry had been stimulated while studying in Germany with Karl Knies and J. Conrad. At Wisconsin, in the winter of 1892–93, Ely arranged for William A. Scott to give a course called Economics of Agriculture.[104] H .C. Taylor audited those lectures in the winter of 1896–97.

Scott's lectures started with a description of the English manorial system. To commence on, that seemed very remote from the problems of Wisconsin farmers, but what Scott undertook to do, having started with the old feudal system of agriculture, was to show the transfor-

[103] Personal interview by Anne Dewees (February, 1941).

[104] See the Wisconsin University Catalogue for 1892–93, pp. 60, 144. Scott continued to give that course for about ten years. Early courses noted are, a course in the History of Agriculture listed in the Wisconsin University Catalogue for 1874–75, p. 27, and a course in Farm Management offered by Professor W. A. Henry beginning in 1887–88. (See catalogue p. 128).

mation that gradually took place, particularly the transformation that was necessary when industry and commerce developed in England to the point where there was a great demand on the part of the growing cities for products of the farms. That descriptive material showed the dynamic character of agriculture and how, through the decades and centuries, the farmers found it necessary to shift from one type of farming to another and from the use of one type of equipment to more efficient types. Scott then brought the attention of the students to the shifts that were taking place in the agriculture of southern Wisconsin.

In the early days Wisconsin farmers gave primary attention to the growing of wheat, the production of wool, and in some areas the production of hops or tobacco. But the time had come when hops and wheat and sheep were no longer profitable, and the keeping of a few red cattle producing a small amount of milk and a small amount of beef was not adequate to support the farm family. It was obvious that a new type of farming was necessary. It was also clear in the minds of the men at the College of Agriculture that that new type of farming was dairying and the production of butter and cheese for city markets. Aside from areas close to Milwaukee and very close to the smaller cities, fluid milk had not come very largely into the picture. Professor Scott pointed out that it was easy to see that the shift to dairy farming was exactly the thing needed and raised the question as to why it was going on so slowly. The answer was found, according to Scott's view, in the fact that it took a considerable amount of capital to construct the necessary barns and to acquire a herd of dairy cattle and that the lack of capital was the basic difficulty in making a rapid transition from general farming to dairy farming in Wisconsin.

Scott then gave a lecture on farm credit in which he pointed out that the agricultural depression of the 1890's had created a state of mind on the part of farmers as well as bankers that discouraged borrowing money with which to pay for barns and cows.

Liberty Hyde Bailey

A quotation from one of Liberty Hyde Bailey's reports, written in 1896, shows his awareness of the economic implications of the general scope of the extension work in horticulture:

> The animus of the entire enterprise has been an attempt to inquire into the agricultural status, to discover the causes of the rural depression, and to suggest means for improving the farmer's position. This attempt has been specifically directed to a single great branch of rural industry, horticulture, in pursuance of the provisions of the law [Nixon Bill of 1895, New York State]; but what is true of the horticultural communities is essentially true of other agricultural regions, and, moreover, these two types of agricultural industry cannot be separated by any arbitrary lines. *The work, therefore, has practically resulted in a broad study of rural economics.* We conceive that it

is impossible to really extend the Experiment Station and University impulse to the people in such manner that it shall come to them as a living and quickening force, without first studying the fundamental difficulties of the farmers' social and political environment.[105]

G. N. Lauman, who thought history would furnish a way to evolve a theory of agricultural economics, offered a course in the History of Agriculture in the spring of 1901[106] and in the fall of 1901.[107] He then offered his first course in Economics of Agriculture in the spring of 1902 — a course that was "designed to introduce the student to the methods and results of the application of agricultural and economic principles to agricultural practice."[108]

It may be said that as Gregory at Illinois gave Hunt an economic bent, and Fairchild at Michigan gave Bailey an economic outlook, so Bailey and Hunt provided an impetus which G. F. Warren carried forward. Likewise, Hays at Minnesota started a development which through the years continued to grow in importance under the able leadership of Andrew Boss. The work started by Ely and Scott at Wisconsin laid the foundations for the opportunities and the developments in agricultural economics which H. C. Taylor and B. H. Hibbard participated in and further stimulated. There were other signs of interest in the economic aspects of agriculture here and there, but at Cornell, Illinois, Michigan, Minnesota, Ohio, and Wisconsin are found the roots which seem to account for most of the early growth of agricultural economics in the United States.

[105] L. H. Bailey, "Second Report Upon Extension Work in Horticulture," Cornell Agr. Exp. Sta. *Bulletin* 122 (Ithaca, 1896), pp. 471–72.
[106] Cornell University, *Register,* 1900–1901, p. 257.
[107] Cornell University, *Register,* 1901–1902, p. 274.
[108] Cornell University, *Register,* 1901–1902, p. 274.

5.
Agricultural Economics Finding Itself

At the beginning of the twentieth century a new interest in economic questions relating to agriculture was aroused in educational centers. The agricultural depression of the 1890's, the educational program of the Patrons of Husbandry, the organized uprisings of the farmers — particularly the Farmers' Alliance — and the writings of men like Henry George and Josiah Strong developed an atmosphere in which the minds of thoughtful students were turned to the subjects which, in the course of time, came to be called Agricultural Economics.

The Pioneers

In the early days the professor of agriculture had to cover the whole field. With the development of the chemistry of plant and animal nutrition, agronomy, horticulture, and animal husbandry as separate courses, the field of the professor of agriculture was narrowed to farm practices and the business aspects of farming. As a rule the professor of agriculture was not prepared to enter deeply into the study of the economics of agriculture. That situation left an open field which was entered by men with a great variety of training and points of view and with personal as well as scientific and humanitarian interest. The personal interest naturally led to an effort on the part of each one to shape the new work to fit his own outlook and qualifications.

More than a score of men had entered the field by 1910. Thomas F. Hunt, who had been teaching a course in rural economics at Ohio since 1892, went to Cornell in 1903 where he taught a course in farm management and started the Tompkins County survey. His book on *How to Choose a Farm,* published in 1906, is a study in comparative agriculture and farm management. Thomas C. Atkeson gave a course in rural economics at West Virginia from 1897 to 1910.

Fred W. Card had been teaching farm management at Rhode Island since 1898, and published a book on farm management in 1907. George N. Lauman was teaching a course called Economics of Agriculture at Cornell in 1901. Willet M. Hays and Andrew Boss were teaching farm management at Minnesota at the beginning of the century, started the route system of farm cost accounting in 1902, and issued their first bulletin on that subject in 1906.

William J. Spillman started work in farm management in the U. S. Department of Agriculture in 1902. Henry C. Taylor gave his first course on agricultural economics at Wisconsin in the winter of 1902–03. His *Syllabus of Lectures on Agricultural Economics,* Part I, *Economics of Farm Management,* printed in January, 1903, and his *Introduction to the Study of Agricultural Economics,* published in 1905, were efforts to enter the field from the point of view of economics. Homer C. Price had succeeded Hunt in rural economics at Ohio in 1903. Benjamin H. Hibbard was teaching agricultural economics at Iowa State in 1904 and gave special attention to farmers' organizations as they related to the marketing of farm products.

Thomas Nixon Carver started a course at Harvard in 1904 called The Economics of Agriculture With Special Reference to American Conditions. He gave special attention to the question of intensity of culture, which he viewed as a problem in the economical proportions of the factors of agricultural production.

George F. Warren as a student at Cornell took Hunt's course in farm management. When Hunt went to Pennsylvania in 1907, Warren succeeded Hunt in giving that course and in carrying out the Tompkins County survey. J. R. Fain started a course in farm management at Georgia in 1907. H. D. Scudder was giving a course in farm management at Corvallis, Oregon, in 1907.

Commencing in 1908, Alexander Cance taught agricultural economics and J. A. Foord was working in farm management at Massachusetts where Kenyon L. Butterfield, who was interested in rural life problems from a social and economic point of view, was President. D. H. Doane started farm survey work in Missouri in 1908 for the U. S. Department of Agriculture and was placed in charge of the newly created Department of Farm Management at the University of Missouri in 1910. D. H. Otis, who had been working on animal nutrition and was assistant to the dean of the College of Agriculture of Wisconsin, entered the Department of Agricultural Economics at Wisconsin in 1909 as Professor of Farm Management.

C. W. Pugsley offered a course in farm management at Nebraska in 1909. Ed H. Webster of Kansas, Leroy Anderson of California, and Harry Hayward of Delaware were likewise making beginnings in farm management in their respective institutions by 1910.

It was inevitable that time would be required for so many diverse men to join in one unified effort to develop a growing subject.

Some of these men had been trained in economics; other had not. Those who were familiar with economic terminology were prone to use the words with which they were familiar. Those who had entered the field as agriculturists rather than specialists, or who had entered from other specialized fields — such as agronomy, horticulture, or animal husbandry — and who were unfamiliar with economic terminology, were disposed to use words and phrases with which *they* were familiar. This naturally led to confusion. The men in the various agricultural colleges and in the U. S. Department of Agriculture who were working in this field did not always understand each other. For example, some used the term "farm management" for the work of the agriculturist who brings together from all sources information useful in the profitable organization and operation of a farm. At the same time, the farm economist was using the term "farm management" to include simply the economic aspects, as distinguished from the physical and biological aspects of farm organization and operation. There were also those who used the term "farm management" to embrace all the business aspects of agriculture, including the economics of production, land tenure, credit, and the economics of marketing farm products.

Meetings of American Economic Association, 1907, 1908

At a meeting of the American Economic Association at Madison, Wisconsin, December 1907, the discussion at a round table on agricultural economics was primarily on the scope and content of this new field of economics research and education.[1]

No special papers were presented on the subject of agricultural marketing, but in the outline of the field presented by R. P. Teele of the Department of Agriculture, marketing occupied a place coordinate with production.[2] The outline Teele presented was quoted from a report adopted in 1900 by the Committee of the Association of American Agricultural Colleges and Experiment Stations on Methods of Teaching Agriculture. The points relating to marketing covered in that outline were preparation for market, choice of market, transportation, method and cost of sale, and legal requirements, e.g., weights, measures, packages, commissions, inspection. At that same meeting, B. H. Hibbard, then Professor of Agricultural Economics at The Iowa State College, presented an outline of the field of agricultural economics in which he did not discuss the subject of marketing as such, but devoted considerable space to the subject of co-operative undertakings,[3] under which were listed (a) farming; (b) insurance; (c) stores, general; (d) buying special supplies, as twine, machinery, seed; (e) selling, as cattle, cotton, grain, fruit; (f) manufacturing (and selling), as butter, cheese, canned goods, packing house prod-

[1] American Economic Association, *Quarterly*, 3 ser., 9:59–82 (April 1908).
[2] American Economic Association, *Quarterly*, 3 ser., 9:65.
[3] American Economic Association, *Quarterly*, 3 ser., 9:78–79.

ucts. The co-operative buying, as here suggested, was obviously for the purpose of securing the farmers' supplies at lower cost. Co-operative selling was organized for the purpose of securing better prices.

In December 1908, some of the people interested in agricultural geography and agricultural economics met at the annual meeting of the American Economic Association at Atlantic City. On that occasion John Lee Coulter gave a paper, which was discussed by J. B. Morman, on the problems of agricultural marketing.[4] Coulter implied that there might be something wrong in the middleman process. He made no affirmations but raised questions relating to co-operative marketing.

In discussing this question, Morman said:

> . . . the aim of cooperation has been either to eliminate the middleman altogether or to cut down his profits so as to assure greater returns to the producers. But the very organization of industry, whether individual or cooperative, creates middlemen, whose function it is to serve as the agents between farmers and the consumers of agricultural produce. Cooperative organizations *have not been able to dispense with the economic machinery of distribution.*[5]

Morman claimed also that under the co-operative system the persons performing the middleman services are hired men, subject to the co-operative association, instead of independent operators working at their own risk and in their own interest.

Graduate School of Agriculture, 1908 and 1910 Sessions

The Graduate School of Agriculture, a four-weeks summer course in agriculture conducted by the American Association of Agricultural Colleges and Experiment Stations, in co-operation with some one of the agricultural colleges,[6] brought together the men interested in the sciences relating to agriculture for advanced courses and the exchange of ideas.

At the 1908 session of the Graduate School held at Cornell, economic aspects were recognized by providing a place on the program for G. N. Lauman, H. C. Taylor, and G. F. Warren.

July 4–29, 1910, the fourth session of the Graduate School of Agriculture was held at the Iowa State College. A course on the economic and social aspects of agriculture was offered for the four-weeks term. Of that course Dean A. C. True said:

> One of the most important enterprises of this session of the Graduate School was the course in rural economics and sociology, [given for the first time]. The broadening of public interest in the more general problems of country life is leading the agricultural colleges to more active efforts to establish adequate courses of instruction in farm management and rural economics

[4] American Economic Association, *Quarterly*, 3 ser., 10:258–74 (April 1909).
[5] American Economic Association, *Quarterly*, 3 ser., 10:269.
[6] Seven sessions were held as follows: Ohio State University, 1902; University of Illinois, 1906; Cornell University, 1908; Iowa State College, 1910; Michigan Agricultural College, 1912; University of Missouri, 1914; Massachusetts Agricultural College, 1916.

and sociology and to institute definite investigations along these lines. In their present formative stage these matters are of interest to all connected with our agricultural colleges and experiment stations. It was therefore thought best to undertake at this session of the school a general discussion of the field of teaching and investigation in these lines. The result proved the wisdom of establishing such a course. It was largely attended, and great interest was evoked by the lectures.[7]

K. L. Butterfield, W. J. Spillman, H. C. Taylor (cf. *supra,* p. 83) and B. H. Hibbard each led the discussions of rural economics for a week. Each gave five lectures and held three seminars.

American Farm Management Association Organized

During the closing days of the four-weeks session of the Graduate School in 1910, a group of interested persons organized the American Farm Management Association.[8] K. L. Butterfield had presented to the Graduate School his ideas on the place of the social sciences in agricultural education and research. The newly organized farm management association adopted and published Butterfield's statement as follows:

Analysis of the Rural Problem
in Terms of Broad Divisions of the Subject Matter[9]

K. L. Butterfield

1. The Technical Aspect: *Farm Practice* or *Agriculture.* How can the individual farmer most effectively and economically utilize the laws of nature in the growing of plants and animals?
2. The Business Aspect: *Farm Administration* or *Farm Management.* How can the individual farmer so organize the factors of production — land, labor, and capital — on his farm, so adapt farm practice to his particular environment, and so dispose of his product as to yield him the largest net return, while still maintaining the integrity of his land and equipment?
3. The Scientific Aspect: *Agricultural Science.* How can we learn more of those laws of nature which control the growth of plants and animals for human uses, how apply those laws to the procuring of an increased food supply, and how at the same time conserve the natural resources upon which the food supply depends?
4. The Industrial Aspect: *Agricultural Economics.* How can farmers as a class secure the largest financial success, while giving to the consumers an adequate food supply and maintaining the soil resources? How adjust sys-

[7] A. C. True, [editorial] in *Experiment Station Record,* 23:406 (October 1910).

[8] Those actively participating in promoting the organization were: J. A. Foord, F. D. Gardner, Harry Hayward, G. N. Lauman, M. E. McCullock, D. H. Otis, C. W. Pugsley, W. J. Spillman, G. F. Warren, and E. H. Webster. B. H. Hibbard was also present. See American Farm Management Association, *Report of the First Annual Meeting,* held at Ames, Iowa, July 28, 1910 (Pub. by the Association. Date of publ. not given), p. 2. A meeting of interested persons was held July 26 and committees were appointed; on July 27 a constitution was adopted and officers elected; on July 28 the first meeting of the American Farm Management Association was held. On January 8, 1919, the name was changed to American Farm Economic Association. See *Journal of Farm Economics,* 1:40 (June 1919).

[9] The American Farm Management Association adopted this analysis of the rural problem by President Butterfield and has incorporated it in its circular for the purpose of showing the field covered by farm management and its relation to or correlation with other agricultural objects. The Association voted to combine number three with number one as the scientific aspect.

tems of land tenure, means of transportation, methods of marketing, systems of taxation, institutions of credit, and protective and stimulative legislation to the legitimate industrial needs of the farming class?

5. The Community Aspect: *Rural Sociology*. How can the people who farm best utilize their industrial and social environment in the development of personal character, best co-operate for their common welfare, and so best maintain permanent institutions which are to minister to the continued improvement of the common or community life? How best organize the personal and community resources of the rural people for the purposes of contributing most fully to national welfare?[10]

W. J. Spillman, D. H. Otis and Harry Hayward were appointed a committee on scope of the organization and lines of cleavage. That committee asked B. H. Hibbard and G. N. Lauman to meet with it in order to aid in defining the fields of Rural Economy and Farm Management. With Butterfield's material in hand, the Committee on Scope and Cleavage made the following report on July 28, 1910.

The field covered by Farm Management is:

1. The organization of the farm, in which we deal with such questions as types of farming, equipment, labor, etc.
2. Farm operation, in which we deal with the various types of farming as they are conducted in the various regions where they occur.

The general study of farm practice is an essential prerequisite to the study of farm management questions.

Farm management deals with the rural problem from the individual or private point of view. It differs from agricultural economics or rural economy and from rural sociology in that these subjects view the rural problem from the national or public point of view.

In the study of systems of land tenure, for instance, the student of farm management wants to know what the various systems are and the business results which are likely to accompany them. He is also interested in the effect they have on the fertility of the soil. On the other hand, the student of rural economy is interested in land tenure in relation to the economic welfare of the people in general, while the rural sociologist is interested in its effect upon citizenship and the social status of the rural population.

Relative to the value of land, the student of farm management is interested in the question from the standpoint of the cost of starting a farm; the student of rural economy is interested in the causes which affect land values and in the effect that land values have on industrial affairs.

Again, such subjects as Mutual Insurance Companies among farmers are plainly closely related to the business of the farm, but must be regarded merely as a small extension into the business of farm management of a very large subject which, on the whole, lies entirely outside of the realm of farm management. It would, therefore, seem expedient that it should be handled by the rural economist, although the teacher of farm management may point out the advantages to be gained by such an organization.

Such subjects as farm plans and farm accounts lie wholly in the field of farm management. We may also include under this head the subject of farm equipment, although other scientists may have interests in this subject.

Farm management is interested in the subjects of agronomy, animal husbandry, dairying, horticulture, etc., insofar as they relate to the business

[10] American Farm Management Association, *Report of the First Annual Meeting*, 1910, pp. 3–4.

management of the farm. The question of what varieties of field crops or other plants, the kind and amount of cultivation needed, how to care for the seed, etc., are purely agronomy and horticultural problems. On the other hand, the question of whether a farmer should grow corn and how much to grow and whether he shall sell it or feed it are farm management questions.

Many scientific and practical questions in agronomy, animal husbandry, dairying, horticulture, etc., may be answered in part by the experience of farmers, and frequently their solution only awaits the collection of facts and their adequate interpretation. Since the farm management investigator devotes his time primarily to the collection of data existing on farms (his material exists there and nowhere else) and since he is trained in the interpretation of data which exist in farm environment, we believe that the greatest efficiency will result to our colleges by encouraging the farm management investigator to collect such data wherever he finds it in connection with his work, and to make such reports of the same as will be mutually satisfactory to all departments concerned.

We believe, therefore, that the fieldworkers in farm management should be free to study farm practice in all its phases; furthermore, we believe that an enormous gain in efficiency of our investigations will be made by having the farm management investigators work in the closest cooperation and harmony with the rural economist, the agronomist, the animal husbandman, the poultryman, the horticulturist, and all of the other investigators whose business relates directly to the farm.[11]

The statement by Butterfield and the findings of the Committee on Scope and Cleavage may have been helpful to those who accepted the report, but to others it was evidence of the confusion that had grown out of the mixed terminology.

Findings Challenged

H. C. Taylor had returned to his work with the census of agriculture in Washington before the end of the 1910 Graduate School and therefore was not present at the meeting at Ames when the American Farm Management Association was organized. When he learned of the conclusions promulgated by that meeting he was disturbed. He looked upon the economics of farm management as an essential part of agricultural economics. Taylor did two things. He sought clarification of the committee report through correspondence with G. F. Warren, Secretary of the Farm Management Association, and he initiated an investigation leading to a report on the relation of farm management to agricultural economics by the American Association of Agricultural Colleges and Experiment Stations.

Taylor wrote to Warren asking for more details regarding what had taken place at the Ames meetings on July 26–28, 1910, as reported above. It will be readily understood why Taylor was not happy with the results of that meeting. He naturally turned to Warren, who was his closest friend in the group. Warren responded in a letter[12] dated November 2, 1910, in which he said:

[11] American Farm Management Association, *Report*, 1910, pp. 4–5.
[12] The following letters (or carbons of them) are in the H. C. Taylor Archives.

I am enclosing some of the statements concerning the farm management association which was organized last July. . . . I had nothing to do with the report of the Committee on Scope, but it seems to me they have covered the ground fairly well. I particularly like the statements which I have marked. . . .

The first marked passage read as follows:

Such subjects as farm plans and farm accounts lie wholly in the field of farm management. We may also include under this head the subject of farm equipment, although other scientists may have an interest in this subject.

The second marked passage read:

The question of what varieties of field crops or other plants, the kind and amount of cultivation needed, how to care for the seed, etc., are purely agronomy and horticultural problems. On the other hand, the question of whether a farmer should grow corn and how much to grow and whether he shall sell it or feed it are farm management questions.

Upon receipt of the above letter Taylor wrote on November 4, 1910, to Warren as follows:

I wish to thank you for sending me the materials showing the progress made by the American Farm Management Association. I find the discussion of the lines of cleavage very interesting. As I look it over I am trying to classify myself and find, as a matter of fact, more of the work that I am doing and have done seems to be in the field of what the committee calls farm management than in the field of what the committee calls agricultural economics.

You will be interested to know that in my Syllabus of Agricultural Economics published in January 1903 I made the following statement in the introduction: "Agricultural Economics is divided into two parts. Part I takes the farmers' point of view and treats of those economic principles which underlie the management of a farm in such a way as will make it yield the largest net returns; part II takes the point of view of the nation as a whole and treats of those economics principles which should guide a statesman in his attempt to regulate and improve the agriculture of the country. In part I we view agriculture from the standpoint of private interests; in part II from the standpoint of public interests or general welfare. Part I may be called private agricultural economics or the economics of farm management; part II public agricultural economics or an agrarian policy." Of this syllabus but one part was published and it was entitled "Economics of Farm Management."

This separation is the same as that the committee has made. Why they should consider it the study of economics when viewed from the standpoint of the nation and not consider it economics when viewed from the standpoint of the individual farmer, I do not fully understand. I found in working out the subject that it was difficult to adhere to the division which I made in the syllabus and in my new outline did not adhere to that same division, but devoted most of the discussion to the subject from the standpoint of the individual and noted points where the individual interest is in conflict with the public interest. More than two-thirds of my book on agricultural economics would be, according to the report of the committee, farm management, that is, it is as I see it, the economics of farm management. I do not say this to criticize the report of the committee, but the thing I wish to emphasize is that the distinction is one of terminology and not of essence. I would like to have you look over my bulletin on "The Renting of Farm

Lands in Wisconsin" and state whether, according to your notion, that should be classed as farm management or as rural economy. It had seemed to me before the report of this committe was made that the natural line of cleavage was that of the science and art; that is, the economics of farm management, the chemistry of farm management, the biology of farm management are all essential, but no one of them separately, nor all of them combined constitute farm management. The field of farm management as I have seen it is distinguished from agricultural economics in that it is the art of applying the principles of economics, biology and physics on a given farm at a given time.

I think it worthwhile, however, for us to carry on some correspondence on this point in order that we may get the matter worked out on right lines. As you know, nothing is settled until it is settled right.

On November 11, 1910, Warren responded as follows:

I believe that the teacher of farm management will, if he does good work, find that his work is much more likely to overlap on that of farm crops, horticulture, etc. than it is to overlap very far on economics. Of course, the principles of economics must run all through the teaching of all of the applied subjects. . . .

One of the chief lines of work which the farm management department is called upon to do at the present time is to advise farmers as to the organization and management of farms. I have just dictated the answers to several letters such as come in to this department every few days. A farmer has a certain farm with a certain soil, a certain distance from market. He wonders what kind of farming would really be best under his conditions. No one can answer him who is not up to date on farm crops, on soils, on animal production, fruit growing, etc. The extreme specialist on any of these lines cannot answer this letter because if the letter were sent to the poultryman he would start the farm with chickens, and if it went to the dairyman he would immediately start a big dairy on it. Some one who is reasonably proficient in all of these lines of work must judge them, without prejudice, in order to answer such a letter.

Underlying his answer must be a knowledge of business principles, but the final answer depends on a technical knowledge of these first principles of agriculture. Before we had so great a division of the field of agriculture, one man who was the professor of agriculture, did all of this work but rarely touched on agricultural economics. It seems to me that the interpretation of a year's accounts in such a manner as to most profitably handle the farm in the succeeding year, involves precisely this kind of a knowledge. It is not sufficient that the man go into that particular enterprise which pays best. The fact of the fertility of the land and innumerable technical factors must be considered. The general principles of economics again are a basic principle underlying it all. Just as reading is a fundamental requirement for the study of trigonometry; reading must be assumed as a matter of course and we say that algebra and geometry are the prerequisites. . . .

I have just had a good illustration of what seems to me to be the difference between rural economy and farm management. One of our graduate students is working on the marketing of farm products which very title would suggest it might very likely be rural economy pure and simple. As a matter of fact, what this man is doing overlaps much more on horticulture and farm crops than it does on any other kind of work. The first and foremost problem which he has to solve is the shrinkage of farm products when held for different periods. After this is determined, the rest of the problem becomes a very easy matter, as it is only a question of finding the relative prices at different

times of the year, considering the cost of storage, insurance, interest, labor, etc., and finally arriving at a conclusion as to the best time or times for the individual farmer to sell each individual product. I doubt whether any rural economist would be likely to study these particular things if he were assigned the subject of marketing farm products. The distinct difference is not in the name but in what is done.

I think that my ideas on this agree with yours fairly well but there is one difference; I do not consider farm management to be an art. In other words, we disagree on the definition of the word art.

On November 4, 1910, the same day he wrote the second letter to Warren, Taylor wrote letters to Dean H. L. Russell and A. C. True. The letter to Dean Russell read as follows:

I wish to call your attention to the desirability of having a committee appointed at the next meeting of the American Association of Agricultural Colleges and Experiment Stations to present a report on terminology, lines of cleavage, and content of courses which should be made use of in that line of work which relates to the economic aspects of the production and marketing of agricultural products.

During the last few years courses have multiplied in this field. The terminology varies so greatly that a man in one of the agricultural colleges talking to a man in another agricultural college has to explain what he means by his phrases before the two can unduertsand each other. The phrases rural economy, rural economics, agricultural economics, farm management, farm administration, farm organization, and economics of farm management are all often used to designate the same kind of work. It is also true that the usage in many of the agricultural colleges of the United States is clearly out of harmony with the usage in those European countries where this field has been well developed. I think it highly desirable, therefore, that a committee be appointed with a view to clearing up some of the fog that still hovers about this new field.

Taylor wrote as follows to True:

You are doubtless familiar with the character, purpose, and activities of the American Farm Management Association. The action taken at this time appeals to me as lacking deliberation in presentation. Nevertheless, the results of this meeting are, as I understand it, to be published and scattered broadcast. For this reason I think it highly desirable that the American Association of Agricultural Colleges and Experiment Stations should take this matter up and have a committee appointed which will be representative, and which will make a report to be presented at the next meeting, that is, the 1911 meeting, with a view to clearing up some of the fog which seems yet to hover about the subject in the minds of many of the men who are participating in it. Naturally, I would ask Dean Russell to bring the matter up. I am writing you and enclosing a copy of a letter to Dean Russell in order that I may have your view of the desirability of such a movement and also, if desirable, that I may have your support in the movement.

The result was that this question was referred to the Committee on Instruction in Agriculture of which A. C. True, T. F. Hunt, J. F. Duggar, W. E. Stone, H. C. White, and H. J. Waters were members. The Committee appointed a Subcommittee on Rural Economics and Farm Management consisting of T. F. Hunt, H. C. White,

and J. F. Duggar, the function of which was "to study the relationship between rural economics and farm management and, if possible, to define the subjects and determine their lines of cleavage."[13]

T. F. Hunt Report

T. F. Hunt took almost the entire responsibility in preparing the report. He sent a letter of inquiry to interested persons in order to obtain information which would help his committee. In that letter he outlined briefly the report on lines of cleavage and said:

> The committee assumes that it is charged with the responsibility of dealing with Nos. 2, 4, and 5. It is obvious that in order to make a study of rural economy and farm management, as they affect the practical workings of the institutions of the Association of American Agricultural Colleges and Experiment Stations, it is essential that the committee should acquire as fully as may be a knowledge of the subject matter actually taught in the leading institutions, and especially in those institutions which have both a department of rural economy and a department of farm management.
>
> I have made a *free* translation of the table of contents of a recent French work on rural economy [Jouzier]. It is thought that this syllabus might serve as a point of departure in the discussions of the subject of rural economics and farm management, and that it would indicate the amount of detail desired to those who may feel disposed to assist the committee.[14]

In the report Hunt quoted from the responses[15] received from K. L. Butterfield of the Massachusetts Agricultural College, L. H. Bailey of the College of Agriculture of Cornell University, H. C. Price of the Ohio State University, D. H. Doane of the University of Missouri, C. W. Pugsley of the University of Nebraska, D. H. Otis of the University of Wisconsin, G. F. Warren of Cornell University, L. H. Goddard of the Ohio Experiment Station, F. D. Gardner of Pennsylvania State College, and H. C. Taylor of the University of Wisconsin.

Butterfield adhered essentially to the position that he had presented at the Graduate School the previous year (cf. *supra* pp. 84–85). L. H. Bailey adhered to the division that had been agreed upon by Warren and Lauman as published in the *Cyclopedia of American Agriculture*.[16]

Dean Price used the term "rural economics" as a generic term including farm management as well as the public aspects of rural economics, rural sociology, and comparative and historical agriculture. He said: ". . . farm management is a study of the economics of agriculture from the standpoint of the individual. . . ."[17]

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[13] "Report of the Committee on Instruction in Agriculture, 1911," U. S. Department of Agriculture, Office of Experiment Stations, *Circular* 115. (Washington, 1912), p. 3.
[14] U.S.D.A., Experiment Stations, *Circular* 115, p. 4.
[15] U.S.D.A., Experiment Stations, *Circular* 115, pp.4–11.
[16] See article by G. F. Warren on "Farm Management" and article by G. N. Lauman on "Rural Economy" in *Cyclopedia of American Agriculture,* ed. by L. H. Bailey (New York: The Macmillan Company, 1909), 4:438–42.
[17] U.S.D.A., Experiment Stations, *Circular* 115, p. 5.

Warren made a succinct statement with regard to the division of the field. He said:

> How shall I grow corn is agronomy. How shall I grow an animal is animal husbandry. But shall I grow animals or corn, or both, or neither, is farm management.
>
> Rural economy deals with the public relations of farming rather than with the internal organizations and management of specific farms.[18]

Doane was clear in his explanation of the matter, saying:

> Farm management is the organizing and correlating of the elements and branches of agriculture into a successful system or plan of farm administration. Rural economics, as I see it, is simply one of the "elements or branches."
>
> I class the rural economist with the agronomist, the animal husbandman, the horticulturist, and others. They simply bring or contribute the material, while the farm-management man must tell "what" and "how much" to select and use.
>
> There is more difficulty in distinguishing between general economy and rural economy than between the latter and farm management. I think the rural economist and the farm-management man should work hand in hand. In fact, we have in our department here a phase of farm accounting and work along "cost-of-producing" lines that is in reality farm or rural economy. We find this work necessary as a "following-up" plan, or a system for proving suggested operations.[19]

It would seem that Otis had somewhat the same view as Doane:

> . . . I am strongly convinced that the man interested in farm management, while he should and must be familiar with economic principles, must of necessity approach his subject from the standpoint of farm experience. He must be a farmer first, and an economist second. Farm management, as I see it, is the application of economic and scientific principles to the business management of the individual farm.[20]

The views of Gardner corresponded fairly well with those of Professor Doane:

> Farm management should be based on the subjects of agronomy, horticulture, animal husbandry, dairy husbandry, agricultural engineering, and the sciences and practices that underlie these subjects. As taught to the student, it should follow and be based on his knowledge of these subjects. It is the culmination of his technical studies in agriculture, bringing them together and applying them to the problems of the farm and its administration. . . .
>
> The line of cleavage separating farm management from rural economics may not be sharply defined. The line enclosing and separating one from the other will be a series of projections and recessions dovetailing together as the cogs of one pinion dovetail with those of its companion.[21]

From the materials Taylor sent to Dean Hunt, Hunt quoted in his report the following:

> Of the recent writers you could have done no better than to refer to Jouzier. The table of contents seems to include the main points needed for

[18] U.S.D.A., Experiment Stations, *Circular* 115, p. 7.
[19] U.S.D.A., Experiment Stations, *Circular* 115, pp. 5–6.
[20] U.S.D.A., Experiment Stations, *Circular* 115, pp. 7.
[21] U.S.D.A., Experiment Stations, *Circular* 115, pp. 8–9.

present purposes. This in itself would be sufficient to show that the question under consideration is one of words, for Jouzier includes under *économie rurale,* which for my purpose I translate agricultural economics, the very subject matter which some in this country call farm management.

I wish, however, to quote from Jouzier's introduction some paragraphs which seem to throw light upon the subject in hand:

"Philologists tell us that the word economics is formed from two Greek words, which, united, mean laws or rules of the household — that is to say, developing the idea which the ancients attached to the words: The manner of regulating the relations of the different elements composing the resources of the household, whether it be their relations to each other or to the members of the household, in order to insure the greatest prosperity to the family.

"The addition of the qualifying adjective 'agriculture' does not change the meaning of the word 'economics' at all; it simply limits the domain to which it is to be applied. In place of saying 'the household' we must say 'the agricultural household'. But as the agricultural household is the farm, or, in more exact language, 'the agricultural enterprise', we shall say that *agricultural economics is that branch of agricultural science which treats of the manner of regulating the relations of the different elements composing the resources of the farmer, whether it be their relation to each other or to human beings, in order to secure the greatest degree of prosperity to the enterprise.*

"These relations consist in (1) *relations of contact* (supplementary, complementary, or competitive) between the different branches of the enterprise, such as, for example, the simultaneous raising of cereals and animals on the same farm; (2) *relations of activity* between the different means employed in the process of production, as in the simultaneous employment of machinery and human labor; (3) *in relations of value* between the means employed in production and the production itself; (4) *in commercial relation* with the social environment, etc.

"The domain of agricultural economics, then, covers the examination of each element of agricultural production, whether in connection with any one of the above-named relationships in particular or with several of them together, for the purpose of obtaining the greatest net profit.

"We may consider agricultural economics as a science or as an art, from a theoretical point of view or from a practical point of view. If we consider it as a science or theory it is the knowledge of the laws which govern the above-named relations; if as an art or practical matter, it is the application of this knowledge in a limited, particular environment for the realization of results from these relationships."[22]

It will be clear from this statement that Jouzier looks upon agricultural economics as (1) the science which treats of the principles which underlie the coordination of all parts of the farm (land, labor, equipment, and the various lines of production) in such a manner as will enable the farmer to secure maximum net profits, and (2) the art of applying these principles on a given farm.

In the University of Wisconsin the science and art of managing individual field crops are taken up by the agronomy department; the science and art of managing orchard and garden crops by the horticultural department; the science and art of managing machinery by the agricultural engineering department; the science and art of the selection and feeding of livestock by the animal husbandry department; the science and art of dairy management by the dairy department; the science and art of soil management by the department of soils. These primary lines of activity when united con-

[22] Etienne Jouzier, *Economie Rurale* (ed. 1, Paris; J. B. Baillière et Fils, 1903), pp. 2–3, translated by H. C. Taylor.

stitute farming. *The science and art of coordinating these lines of activity, and the land, labor, and equipment employed in such a manner as to enable the farmer to secure maximum results from the combined activities, is handled by the department of agricultural economics.* The science and art cannot be divorced. When separated the one is without purpose, and the other is left groping in the dark.

While the principles can be formulated which govern the relations involved in the coordination of the factors of agricultural production, it should be borne in mind that in the last analysis no body of *rules* can be formulated which are of general application. Farms can not be operated by rule of thumb. What is right practice at one time is wrong at another time, and what is right practice at one place is wrong at another. The best training that could be given to farmers would comprise a *thorough knowledge of the physical and biological principles which underlie agriculture, the general laws of economics which relate to agriculture, and a thorough system of accounting, for the purpose of testing out results on the individual farm. . . .*

My contention is that the difference between "farm management" and "agricultural economics" as a college subject is a difference of words; that the one is the art or occupational name, while the other is the scientific name, drawn from the fundamental science which is being applied. It becomes obvious, therefore, that to try to define separate fields for these two terms is an impossibility.[23]

In addition to making the above statements in his letter to Hunt, Taylor submitted a mimeographed syllabus of his general course in agricultural economics, the syllabus of the course in farm accounting, and a brief outline of the course in practice in farm management given by Professor Otis and said:

> I wish to have these syllabi compared with the syllabus used by Dr. Warren and others who, according to my view, are occupying a part of the same field and calling this work Farm Management. I do not care what terms are used; I ask only that nothing be done in the way of attempting to put asunder that which by nature has a vital unity.

The various writers of letters to Hunt seem to fall into three classes: those that looked upon the whole subject matter as belonging to agricultural economics; those that would divide agricultural economics into two parts — one dealing with the subject from the private point of view and the other from the public point of view, calling the first "farm management" and the second "rural economics" or "agricultural economics"; and the group that distinguished clearly the field of the practical farm manager or administrator from that of agricultural economics inasmuch as it bears essentially the same relation to the physical and biological sciences as it does to economics. Price and Taylor took the first position; Bailey, Lauman, and Warren took the second position; Doane and Gardner took the third position. And we are rather of the opinion, judging in part from what happened at his institution, that the third position represented Butterfield's views more definitely than the second.

After giving the matter full consideration, the subcommittee reported as follows:

[23] U.S.D.A., Experiment Stations, *Circular* 115, pp. 9–11.

The subject taught or investigated under the head of farm management, as related to the organization and management of individual estates devoted to agriculture, in the judgment of this committee, necessarily involves the application of the principles of economics. These principles constitute the scientific basis of farm management and give this subject its only just claim for consideration as having a pedagogical value entitling it to a place in courses of study or a scientific standing as related to problems of investigation.

It is true that the farm manager should take into account what is taught under agronomy, animal husbandry, agrotechny, and rural engineering, but he is chiefly and essentially concerned with the application of economic principles to the conduct of his business. Outside of economics there is nothing which can give his business a sound scientific basis. The mere collection of the details of methods of conducting different farms will not suffice. There must be the reference of these matters to some underlying principles. When this is done, it is clear that farm management comes within the domain of economics, because the purpose of farming is to secure a profit from the use of the land and its equipment. If profit is lost sight of, the farm manager, though trained in all branches of farm practice, is doomed to failure.

Some teachers and investigators with a thorough knowledge of farming and either by temperament or training with little interest in philosophical studies have approached the economics of agriculture from the standpoint of farm practice. Some even maintain that it is the only scientific way of approaching the subject.

Other workers in the field, thoroughly trained in economic theories, but perhaps less experienced in farm methods, have developed their subject largely from the philosophical point of view.

Warren, for example, has determined by statistical methods that the labor income in Tompkins and Livingston Counties, N. Y., was greater on a 200-acre farm than on a 100-acre farm. Taylor has with great clearness discussed the relation of the size of farms to income from a purely theoretical standpoint. Both these discussions are valuable, one, perhaps, no more so than the other. The man who intends to purchase a farm in Niagara County, one-third of which is to be planted with apples and interplanted with market-garden crops and two-thirds devoted to general farm crops will not have a thorough understanding of his problem until he has read both discussions.

It is obvious that the ideal to be desired is for the teacher and investigator to bring to these economic problems the training and point of view of both the economist and the agriculturist. The present discussion regarding the respective fields of rural economics and farm management will prove of great benefit to agricultural education and research if it serves to emphasize the fundamental importance of thorough practical and scientific training for teachers and investigators who deal with the complex problems of rural economics, whether these relate to the rural community or the individual farm.

While it is desirable that there should be a uniform nomenclature and that certain lines of cleavage should be indicated when the subject matter now being taught, or proposed to be taught, is clearly outlined, these questions are of secondary importance to the training and ability of the men who must pioneer this field of study.

Furthermore, a whole-hearted attempt should be made to develop this important branch of agricultural study in all our agricultural colleges. At least one man in each institution should devote his time to economic problems relating to agriculture.

In deciding upon the subdivisions of subject matter in any course of study the question naturally arises whether the body of available subject

matter is sufficient to warrant the subdivision. The time has arrived when the discussion of economic problems should be differentiated from what Butterfield has termed the farm-practice subjects, which are included in the first four branches of agriculture as previously outlined by this committee.

With regard to the fifth branch of study, it seems desirable to use the term *rural economics* as applicable to the general field of economics in its relation to agriculture and rural communities. The term *farm management* may properly be restricted to that phase of rural economics which deals with the business organization and direction of individual farm enterprises, or, in other words, deals with the farm as a unit.

Rural economics is preferable to agricultural economics because the former term indicates that the affairs of the community, as well as of the individual farmer, are to be considered under this head. Rural economics or economy has for a long time been used in this sense in this country and abroad, and there does not seem to be sufficient reason for departing from this usage. There does not seem to be any single term under which are grouped the community phases of rural economics, as distinguished from those relating to the individual estates.

But besides the more general courses in rural economics there will undoubtedly be an increasing number of courses treating of various subdivisions of this subject, in addition to farm management. Such, for example, would be courses in farm accounting, cooperation and credit, farm labor, markets and marketing, taxation, etc.

There is another group of rural problems which is quite clearly differentiated from rural economics and forms a branch of social science or sociology, to which the name of rural sociology may be appropriately applied. Rural law and legislation, history of agriculture, and comparative agriculture are also subjects more or less distinct and separate. For the present, however, it may be desirable to put such subjects in some other department in order that some attention may be given them in the scheme of college courses in agriculture. As the resources of the agricultural colleges increase and trained specialists along these lines are available, separate chairs should be established to represent these important subjects.

Your committee is deeply impressed with the importance of developing strong courses in rural economics and sociology and the other subjects just referred to. These all involve the human element in agriculture and country life. They tend to raise the college courses in agriculture above the materialistic plane, to emphasize broadly the human interest that properly inheres in agricultural studies, and thus to inspire both faculties and students in our agricultural colleges with a higher sense of the wide responsibilities attaching to leadership in agricultural affairs. Pedagogically they serve to show that agriculture, when broadly treated, is to be enrolled among the humanities, as well as the sciences; ethically, they point out the vital connection between agricultural science and the welfare of rural people and even of all mankind.[24]

When Hunt presented his report, Taylor was somewhat surprised as well as pleased that it was in harmony with the point of view of Price and himself. Obviously, the Gregory influence was dominant with Hunt. Hunt's report did not bring harmony and a common point of view into the ranks of agricultural economics at once, but it helped greatly in starting the trend in that direction. It stopped the movement for a cleavage between agricultural eco-

[24] U.S.D.A., Experiment Stations, *Circular* 115, pp. 12–14.

nomics and farm management. The fact that the report of Hunt's committee was accepted at once by administrators in the colleges and the U. S. Department of Agriculture was of vital importance in unifying the work in each institution and in starting the movement for comparability of the work in the different institutions.

Concepts Gradually Clarified

The report of one of the committees of the American Farm Management Association in November, 1911, showed great diversity of views held by its members. That was indicated by the report made by Andrew Boss, Chairman of the Committee on Investigations, at the second annual meeting, November 14 and 15, 1911. The committee sent a questionnaire to all the colleges of agriculture. Eight questions were asked. It was found that 16 institutions had investigations under way. In the light of the answers received, the committee stated:

> The wide divergence in the answers to these questions indicates the widely differing views held regarding the nature of farm management work. It also illustrates the great need of a carefully considered plan or outline suggesting fields of investigation which may be national or sectional in scope, and other fields which are more or less local.
>
> Because of the great variety of views held as to the nature of farm management work, it would seem wise to have worked out well defined lines of investigation and terms and methods stated for the interpretation of the results. Such a plan would make it possible to correlate the investigations of various workers and to avoid duplication of investigations of certain factors more or less common to all. . . .
>
> The committee desires to recommend for your consideration the following order of investigations, leading to a safe working basis for the organization of the business of farming.
>
> 1st. A preliminary reconnaissance survey including a history of the agricultural development of the area covered. The type of farming mainly followed and the nationality and habits of the people on the farms. This work borders on rural economy and possibly should be done by the economist.
>
> 2nd. A soil survey made by the Soils Department and placed at the disposal of the farm management investigators.
>
> 3rd. A farm practice survey giving the general farm practices of the state in producing crops, live stock and other commodities, correlating it with the two former surveys. This reconnaissance should be made by the investigators in the allied lines, Agronomy, Horticulture, Animal Husbandry, etc. (If not so made, may be taken up by farm management men).
>
> 4th. A farm management survey having for its aim a complete study of all the conditions governing the agriculture of the region and determining which types of farming are yielding the greatest profits and the factors leading thereto.
>
> 5th. Cost of production studies. These may include the cost of certain commodities or products only or the cost of all the products of the farm including operation depending on the facilities available and the point of view of the investigator.
>
> 6th. Marketing problems in the many phases presented in every community.

7th. Organization of the farm as a business enterprise, covering the proportionate investment of capital, amount, kind and distribution of labor, amount and kind of live stock, kind of machinery and equipment, changes in types of farming, farm planning and improvement, leading to plans and specifications for equipping and operating farms.[25]

It should be noted that Boss's report proposed the historical and geographical approach followed by farm management surveys and cost studies as a basis of decisions on farm organization. It should also be kept in mind that Boss included marketing problems, which indicates that even at that date he recognized the importance of keeping an eye on the market as well as on the farm in planning the combination of enterprises, the working force, and equipment for the year ahead on a given farm.

T. N. Carver had been giving some attention to agricultural economics for several years and in 1911 he published *Principles of Rural Economics*.[26] In that book Carver discussed several subjects which will receive attention later, but he gave no succinct definition of rural economics. He did say:

The present treatise is written in the hope that it may direct attention toward some of the salient features of the rural problem. It emphasizes the public and social aspects of the problem somewhat more and the business aspect somewhat less than do most treatises on this subject.[27]

By piecing together some of Carver's statements, one may let him define agricultural economics as the study of the "important characteristics of agriculture as a way of getting a living."[28]

In 1913 George F. Warren published a book entitled *Farm Management*.[29] In that book Warren said:

Farm management is the study of the business principles in farming. It may be defined as the science of the organization and management of a farm enterprise for the purpose of securing the greatest continuous profit. Successful farming requires good judgment in choosing a farm and in deciding on a type of farming. It demands clear business organization and management for the efficient use of capital, labor, horses, and machinery. It requires good judgment in buying and selling.[30]

In this definition Warren clearly took the economic point of view in harmony with the Hunt report to the American Association of Agricultural Colleges and Experiment Stations in 1911.

The controversy over cleavage and terminology did not disappear overnight but it lost force, and the full attention of all the men in the field was turned to the development of the *subject* of agricultural economics in its varied aspects.

[25] "Report of Committee on Investigations," Andrew Boss, Chairman. The American Farm Management Association, *Report of the Second Annual Meeting*, held at Columbus, Ohio, Nov. 14 and 15, 1911 (Pub. by the Association, [1912]), pp. 5–6.
[26] T. N. Carver, *Principles of Rural Economics* (Boston: Ginn and Co., 1911).
[27] Carver, *Principles*, p. v.
[28] Carver, *Principles*, pp. 1, 17.
[29] George F. Warren, *Farm Management* (New York: The Macmillan Company, 1913).
[30] Warren, *Farm Management*, p. v.

In 1919 the American Farm Management Association and the Association of Agricultural Economists were consolidated under the title of American Farm Economic Association.[31] In the same year the Office of Farm Management in the U. S. Department of Agriculture was reorganized along lines agreed upon by Boss, Warren and Taylor. And in 1920 the departments of farm management and of rural economy at Cornell were consolidated under Warren's leadership as a Department of Agricultural Economics.

All this indicates that agricultural economics was finding itself.

[31] H. C. Taylor, "Development of the American Farm Economic Association," *Journal of Farm Economics* 4:96–98 (April 1922).

PART THREE

ECONOMIC ANALYSIS OF FARM MANAGEMENT PROBLEMS

AGRICULTURAL LIBRARY

6.

Choice of a Farm

In the three years, 1905, 1906, and 1907, H. C. Taylor, T. F. Hunt, and F. W. Card were thinking and writing about how the farmer should choose his farm, and in 1913 G. F. Warren elaborated Hunt's thesis, which in its presentation was the most detailed and specific.

Henry C. Taylor

Taylor was the first of the group to publish his findings. He outlined as follows some of the points to keep in mind in choosing a farm:

> To the farmer, land is valuable not only because it provides space for buildings and roads, and for the performance of such work as the threshing of grain, and the feeding of cattle; it is valuable to him first of all because of those physical and chemical characteristics of the soil and the atmosphere which make the land capable of supporting plant life.
>
> Under the physical conditions which are conducive to plant growth are included: (1) the moisture and (2) the temperature of the soil and the air, and (3) the mechanical structure of the soil. . . .
>
> From the standpoint of the economist the most important chemical conditions of plant growth are: (1) nitrogen, (2) phosphoric acid, (3) potash, and (4) water. Other chemical compounds contribute to plant growth, but these are the ones which require our especial attention because they are present in the soil in limited and varying quantities, and because they are more or less readily exhausted and require considerable effort to increase or replenish their supply. In the humid regions where the water needed by plants is abundantly supplied by Nature this element of fertility requires little or no attention, but in the arid regions water ranks first in economic importance. The carbon dioxide gas of the air is as important to plant growth as is water, but it is present in such great abundance that it has no value placed upon it and hence does not enter into the list of economic conditions which require our attention.
>
> All of these physical and chemical conditions of plant growth are usually included under "the fertility of the land."[1] And as it varies greatly with

[1] Isaac P. Roberts, *The Fertility of the Land* (New York: The Macmillan Company, 1897), p. 9.

respect to these conditions, land is said to vary from place to place with respect to its fertility.

When a man contemplates the purchase of a farm there is one thing more which is of vital importance to him. He wants extent of land and he wants this land to be fertile, but what is sometimes even more significant than these qualities is the *location* of the farm which he is to cultivate. In fact the physical and chemical characteristics of the land are greatly influenced by its location. Heat and moisture, and the character of the rocks from which the soil is formed vary greatly from place to place. But besides these variations in the natural conditions, there are variations in the social conditions which influence the production and sale of products. Large populations are in some places concentrated on small areas, leaving vast territories sparsely settled. . . . Where the population is dense capital is also usually present in great abundance, and can be had more cheaply than in the sparsely settled districts. This abundance of labor and capital enables the farmer to operate his land more cheaply. But this is not all. The farmer who is nearer a great center of population, such as London or New York, can sell his products for the same price which is paid for like products which have been shipped great distances. Thus it is that of two pieces of land equally fertile the farmer prefers the one located nearer a great center of population, because it enables him to produce and market products more cheaply.

Because of these variations with respect to fertility and location, land is said to vary in productivity, or in its value-producing power. That is, a given farmer, employing a given amount of labor and capital-goods of a specified grade, can obtain larger gross receipts upon one piece of land than upon another. . . .[2]

LAND VALUATION

Taylor stated the principles to be followed in estimating the value of land as follows:

The net rent, or the share of the gross returns which, under conditions of free competition, is credited to land, above what is necessary to keep the land intact, is the starting point for figuring the value of a piece of land. When one invests in land, the thing for which he really pays is the perpetual right to use the land and to be free from the payment of rent, or to receive the income which the land will yield if leased to someone else.

The essential difference between the buying of a piece of land and the buying of a perpetual annuity bond lies in the fact that while the income from the latter is fixed in terms of a money income, the former may rise or fall as a result of changes in the conditions of competition for the use of land, or from changes in the value of the unit of the standard of value.

Let it be assumed that the net rent of a given piece of land is three dollars. On the further assumption that this amount will not change, we may think of this acre of land as a perpetual bearer of an annual income of three dollars. Three dollars this year, three dollars next year, and the next, and so on so long as time shall last. The total amount of rent which may be received from this land is incalculable. If there is no limit to the number of years during which rent may be received for the use of this land, then the amount of rent to be received may become infinitely great, and if one were required to pay down the full amount of all these possible rents, which the future years may possibly yield, the price of land would be such that no man could purchase it.

[2] H. C. Taylor, *An Introduction to the Study of Agricultural Economics,* (New York: The Macmillan Company, 1905), pp. 24–27.

PRESENT WANTS ESTIMATED HIGHLY

As a matter of fact, however, the present market value of the perpetual rent bearer is often not more than twenty times the net rent, and it is seldom more than thirty times the rent. This is explained by the fact that present wants are estimated more highly than future wants, which leads to the discounting of future incomes[3] "at a rate that reflects the prevailing premium on the present. . . ."

When the rate of discount is five per cent, for example, the present valuation of a three dollar rent which will be due in ten years is approximately one dollar and eighty-four cents; the three dollar rent which is due after twenty years has a present valuation of about one dollar and twelve cents; and the three dollar rent which is due in forty years has a present value of about forty-two cents. If this process of discounting future rents be carried far enough the point would finally be reached where the present value of the future rent is too small to be taken into account. . . . If the present values of all these future rents be added together the sum would be the present capital value of the land, or the amount of capital which, if lent at a rate of five per cent per annum would yield the same income as the land is yielding at the present time.

The simple mathematical method of finding this "sum" is to divide the annual value, that is the net rent, by the rate which "reflects the prevailing premium on the present." If the net annual income derived from a piece of land is three dollars per acre and the rate of discount is five per cent, the present capital value of the land would be sixty dollars per acre. . . .

As a matter of fact, however, the present capital value of the land as determined in this way does not often correspond with the price which is paid for land. There are several important reasons for this difference. First it is not certain that the annual income that can be drawn from sixty dollars will always be three dollars. The rate of interest may fall to four per cent which would reduce the income to be derived from that amount of money to two dollars and forty cents, while the annual income from the land would not be reduced by a lowering of the current rate of interest. The belief that there is a greater probability of a decline in the income to be derived from the money than from the land, often makes men willing to pay more for land than the amount of capital which will now yield the same income.

COMPETITION CAUSES RISE IN RENTS

Another reason which leads men to pay more for land than a money loan which will, at the present time, yield the same income, is the belief that with the progress of society the competition for the use of land will result in a rise in rents, that, while there is a tendency for the annual income which can be derived by lending a given amount of money to decline, there is at the same time and under like conditions a tendency for the income of a given amount of land to increase.

The available land supply of a country usually increases less rapidly than the population, so that it becomes necessary to resort to land which is either less fertile, less favorably situated, or more difficult to bring under cultivation; and as a result of keener competition for the better grades of land the amount which will be offered for the use of such land will rise. While this is what usually happens in the long run, it sometimes happens that the discovery of great quantities of very fertile land, and the invention of better means of transportation making this new land more accessible, will for a time reduce the competition for the land which was already under cultivation, and the rent of such land may, for a time, be reduced; but it is believed that the

[3] F. A. Fetter, "The Relation Between Rent and Interest," American Economic Association, *Proceedings*, 1903, Part 1, p. 196.

occasional reactions of this kind cannot permanently counteract the tendency for the price of land to rise.

The land which yields the highest rent at one time may be surpassed in the amount of rent which it will yield at another time, by land which was formerly let for a smaller rent. This may be the result (1) of the introduction of a new crop which thrives best on the land which for other purposes was counted inferior; (2) it may be the result of a dense population in a region which had formerly been sparsely populated; in other words, the development of a better home market; (3) it may be the result of an improvement in the means of communication which makes the land which was formerly more fertile but less accessible, equally accessible, and hence, more valuable; or (4) it may be the result of a rise in the prices of agricultural produce, or a fall in the current rate of interest, either of which would result in a more rapid increase in the value of land which is more fertile and accessible, but which requires relatively larger expenditures to bring it into cultivation, than in the value of land which is less fertile or accessible but much more easily brought into cultivation. All of these possible variations in the annual value of land must be properly anticipated and included in the list of future incomes which are discounted to find their present values. . . .

SPECULATION

The presence of so many uncertainties makes the buying of land partake more or less of the character of speculation, and during times of prosperity the tendency is for men to be optimistic and over-estimate the probabilities of a rise in rents or a fall in the rate of interest. On the other hand, when periods of depression come, the tendency is for men to underestimate the future possibilities. As a result of this psychological element, the tendency is for the price of land to rise too high during periods of prosperity and to sink too low during periods of depression. . . .

The price of land in any given district is influenced by the number and character of the men who desire to be farmers in that district. It often happens that competition for the use of land is keener in some regions than in others, even though the land be as fertile, and the prices of agricultural products as high in the one place as in the other. Some districts produce more high grade farmers each generation than do other districts, and as a strong motive is required to impel the surplus of farmers to remove to another district, competition in the over-populated district forces the rents and the prices which are paid for land higher and higher until they are appreciably above the level of those which are paid for land in other districts which are capable of producing crops which are just as valuable in terms of money.

Again, it sometimes happens that land is valued for the social standing which accompanies its ownership, as well as for the income in money which it yields. . . .

Of two pieces of land which will rent for the same amount, that in one district may sell for a higher price than that in another because there is more money seeking investment in the one place than in the other. . . .[4]

Thomas F. Hunt

Hunt, the outstanding leader in developing this subject, described the purpose of his book:

In this book the attempt has been made to state the principles concerned in the selection of a farm, and then to apply these principles to a discussion of the different regions of the Western Continent. It has been recognized that

[4] Taylor, *An Introduction to the Study of Agricultural Economics*, pp. 185–94 (1905 ed.).

a farm has a value as a home and a value for business purposes. Since the home value must be so largely dependent on the personal ideas of the dweller therein, it has been sought to dissociate the home value from the discussion as far as possible and confine it chiefly to the economic value of the farm. The book, therefore, naturally falls into two parts. The first eleven chapters treat of the selection of a farm for profit, with some illustrations of the principles involved. A score-card for judging farms, such as used by the author for a number of years in teaching this phase of farm management to college students, has been made the basis of the discussion in the hope that it may prove a means of concreting the ideas of the reader. The last eight chapters of the book deal with the thirty different regions into which the author has divided America for the purposes of treatment. The discussion of each region follows the order of the score-card outlined in the earlier chapters in order that logical comparison of the different regions may be made.[5]

Hunt dealt with the physical and biological aspects more specifically than with the economic aspects of the subject, but it will be noted that he emphasized the economic significance of the physical and biological aspects. The principal topics covered are: Kind of farming as affecting the value of a farm; size of the farm, its shape and topography; its fertility and the physical properties of the soil; climate, healthfulness, and water supply; location with respect to cities; buildings and fences, timber, orchards, and vineyards. Hunt recognized that farmers vary in ability and that this fact should be taken into account in choosing a farm. Under the heading "Adaptability of the person," Hunt said:

> Certain men are adapted to certain kinds of work and not to others. Certain men who can make a profitable living at market-gardening in what seems to others a sandbank would fail utterly as ranchmen. In every locality there are certain men who are noted for raising large crops of maize or wheat, or for the production of live stock of particular kinds. These things affect the purchase of land. Taylor has shown that farmers with ability to secure the largest profit per acre can out-compete farmers of less ability in the use of the most productive land, as well as in the use of the highest class machinery and live stock and of the best farm methods. On the other hand, while farmers of less ability can not make a profit on the most productive land or with the best methods, on account of the higher cost, yet they may do so on land of less value and with cheaper methods. Thus the tendency of the most intelligent and thrifty farmers to occupy the best farm lands, while the less efficient occupy lands of cheaper grade is shown to follow an economic principle. The causes for the distribution of farmers are so complex, however, that there must necessarily be many exceptions to the law.[6]

About buying a farm, Hunt wrote:[7]

> It is a sound business principle that investment should be made in enterprises that are under the eye. Distance lends enchantment. In business one needs to be disenchanted. An investment in one's own state is to be preferred to one in a distant state. One has a better knowledge of the laws affecting

[5] T. F. Hunt, *How To Choose a Farm, With a Discussion of American Lands* (New York: The Macmillan Company, 1906), pp. v–vi.
[6] Hunt, *How To Choose a Farm*, p. 4.
[7] Hunt, *How To Choose a Farm*, pp. 1–8.

the business in one's own state and one is more likely to have a sound judgment of economic conditions. An investment in one's own community is to be preferred to one in an adjacent community. Others interested in the same or similar investments are neighbors, giving better opportunity to judge of the character and of the stability of the enterprise. If this principle were followed more closely, get-rich-quick concerns would not flourish.

If a man can not see any profit in farming in his own neighborhood, it may be that such inability would stand in his way of success in regions where he had less acquaintance with conditions. Every place has its defects; no place has all the advantages. All the advantages of a given farm, if generally known, must be paid for. While every place has its advantages and disadvantages, the sum of the advantages of one place may be in excess of that of another. The lack of adaptation of the farm management to the natural and economic conditions is a common source of failure. The agriculture of the United States has reached that phase in which hereafter its development is to be internal. The future development is to consist largely in a more marked crop adaptation and a greater segregation of farm industries as a result of such adaptation of crops to natural and economic conditions. Places found well adapted to apples or peaches will become greater centers of apple-or peach-growing; those adapted to grass, greater centers of the industries based on grass. More careful systems of crop diversification will be adopted.

The problem of crop adaptation has been studied consciously and unconsciously ever since the country was first settled. In its very nature, it can never be wholly settled and can never remain settled; but while the agriculture of the country was expanding territorially, crop adaptation and specialization did not assume the importance that they will in the future, since the pioneer occupation of the land has been measurably completed or is, at least, relatively much less rapid. Persons whose tastes and training fit them for certain lines of farming will seek those regions best adapted to the character of farming which they wish to follow, rather than attempt to develop such industries in the regions where conditions are not favorable.

PERSONAL CONSIDERATIONS

Personal considerations enter into the selection of a farm.

1. *The man's experience* — A man experienced in horse-raising may buy a farm of comparatively cheap land on which to raise horses. The kind of horses might affect the kind of farm. Undoubtedly draft horses can be raised most successfully on level land, while light horses may be raised on rolling land. The contour of the land has had much to do in developing distinct breeds of live stock in England. Generally speaking, stock-raising of all kinds may be practical on the rougher and cheaper lands. If one wishes to run a dairy-farm, other things equal, he should choose a cool climate; while, if he wishes to raise cotton or sugar-cane, he must choose a warm climate, and if he wishes to raise rice, he must seek not only a warm climate but land that is capable of being irrigated. If he wishes to raise live stock of any kind, he should see to it that his land will support good pastures. . . .
3. *The amount of capital to invest* — Not only the amount of land, but its location, is affected by the amount of capital to be invested. A young man who has his spurs yet to win and only a thousand dollars in capital may advisedly buy 160 acres of land in a pioneer country where land is likely to rise in value; while an older man with ten thousand dollars may properly buy the same sized farm in a settled community near local markets. As a rule, it is not a good practice to put all one's capital into

the land. The higher the price of the land, the less the proportion of the capital that should be put into it. Where land is cheap and the rise in value certain, a man may put all his capital into his land and then go in debt for more land, and for his teams, tools and seeds, knowing that the rise in value of the farm will soon put him out of debt.

THE FARM AS A HOME

The value of a farm is to be considered from two aspects, namely, its agricultural or economic value, and its home value. This latter aspect must be considered, whether the purchaser intends to live on it or whether he intends to rent it. Among the things to be considered in selecting a farm as a home are healthfulness, sightliness, nearness to schools, churches and neighbors, as well as the ease of communication and travel; the intellectual, social, moral and religious character of neighbors will affect the choice of a home, whether in the country or in the city. If the purchaser expects to live upon the farm, its home value will be of prime importance. Stated in terms of money, it will be as important as the purchaser feels able to make it. It is the tendency of man to live as well as he can afford to live. In general, the farmer is no exception to this rule. Most farmers are contented with a relatively or seemingly small income for capital invested, because their business and homes are one. To put it in other words, the farms of the United States are capitalized above their commercial value because they serve as a home as well as a business.

The rental value of the homes occupied by the farmers of the United States has been estimated at a little less than a hundred and fifty million dollars.[8] This is based on the estimate that the total value of farm homes is less than one and a half billion dollars, and this in turn is based on the reports of the Ohio State Boards of Equalization for 1880 and 1890, which estimate the aggregate value of all buildings on farms at about 14 per cent of the aggregate value of the farms. The census estimate of the value of all farm buildings in 1900 was $3,560,000,000. In fact, however, a farmer pays not only for the value of the building in which he lives, but he pays an increased value per acre for his farm as a "lot" on which to build his home. How much a man should pay for a farm as a home is a personal and sociological question, rather than an economic one; and, while it is recognized to be of prime importance, the value of a farm as a home is scarcely within the scope of this work.

In the pages that follow it is proposed to discuss those factors which enter into the selection of a farm from the standpoint of an investment, in so far as the economic aspects can be dissociated from the sociologic. That they cannot be entirely dissociated is obvious. It may, perhaps, be better to say that in what follows emphasis is to be placed on the economic value of the farm. The following outline [page 108] arranged in the form of a student's score card shows the main points to be considered. . . .

Hunt then discussed the relation of potential land use to the value of farms. He indicated the significance of the proportion of tillage to non-tillage land and pointed out that wheat lands were cheaper than corn lands, not because the wheat from an acre of land sold for less than the corn from an equal area but because corn provided the basis for a livestock industry, while wheat did not.[9] Hunt

[8] C. B. Spahr, *An Essay on the Present Distribution of Wealth in the United States* (New York: Thomas Y. Crowell & Company, 1896), p. 97.
[9] Hunt, *How To Choose a Farm*, pp. 9–12.

Economic Value of Farm	*Standard*	*Student's score*
1. *Kind of Farming*—		
Adaptation as affecting value	3	
Proportion		
2. *Size*—		
As adapted to kind of farming to be pursued	2	
3. *Shape*—		
As affecting shape of fields	2	
As affecting nearness to farmstead	3	
4. *Topography*—		
As affecting production	1	
As affecting ease of cultivation	3	
As affecting loss of soil fertility	2	
5. *Fertility*—		
Natural	15	
Condition	5	
6. *Physical Properties*—		
As affecting economy of cultivation	1	
As affecting number of days of labor	1	
As affecting loss of soil fertility	2	
7. *Drainage*—		
Natural	5	
Artificial, according to its needs		
8. *Condition*—		
Freedom from stumps, stones, weeds, waste land, etc.	3	
9. *Climate*—		
As affecting production and cost of raising live stock	3	
As affecting number of days of labor	2	
10. *Healthfulness*—		
As an economic factor	5	
11. *Water-supply*—		
Running water	5	
Wells		
12. *Location*—		
Local markets for purchase and sale	5	
Neighbors as an economic factor	5	
Shipping facilities	5	
Roadways	5	
13. *Improvements*—		
Location of farmstead	3	
House as adapted to needs of farm	5	
Other buildings as adapted to size of farm and kind of farming	5	
Fences, character, condition and arrangement	2	
14. *Timber, Orchards, Vineyards, etc.*	2	

gave thought to the speculative aspect in considering how to choose a farm:

> Where land is cheap, farms should be large for two reasons: first, the products are usually cheaper and more is necessary to give a profit; second, there is more profit to be expected from the rise in value of farm land.[10]

Hunt pointed out the importance of topography, shape, and size of the fields:

> The importance of the shape of the farms and the shape of the fields will depend somewhat on the kind of farming, as, for example, whether it is to be largely a stock farm or principally devoted to grain-raising. It will also depend on the method of management. If the practice is to pasture all of the fields more or less, somewhat different treatment will be desirable than if the live stock is to be restricted to permanent pastures and not allowed to go on the fields which are cultivated. The latter is coming to be the practice on farms having clay soils.
>
> Sheep-farming requires small fenced fields, so that the sheep may have frequent change of pasture. With general stock-raising, the fields may be few and large. The shape of the field will not be so important, except in the amount of fences required. With grain-raising, the size of the fields should be governed by the size of the farm, as heretofore indicated, and the shape should be such as to make the least work in cultivation. Square fields take less fences. Rectangular fields give longer lands in one direction. But inasmuch as all tillage operations require travel in both directions, it follows that, other things equal, the square field is best.[11]
>
> The contour of the farm may affect easily the adaptability of the farm to the production of certain crops. Lands lying in valleys are well known to be unsuited to the culture of most fruits, because of the danger from late frosts in the spring. The same valleys are generally well suited to the production of maize and potatoes. . . .
>
> The topography of the land as affecting the loss of soil fertility and the washing of gullies must be considered. . . .
>
> Topography influences not only the draft and the efficiency of our improved machinery, but also the character of the machinery best adapted to given farm operations. . . .
>
> The fertility of the soil is, of course, one of the prime factors in determining the value of the land. . . . The increased productiveness of a farm increases the value of a farm out of all proportion to the increase in productiveness.
>
> It should be borne in mind, however, that fertility of the soil is not an absolute thing, but bears some relation to the crops to be raised. Some land which, as in southern Illinois, is ill adapted to the growth of maize, wheat, oats and hay, has been found to be admirably adapted to the growth of apples, while the distinctively fertile maize lands of central Illinois are ill adapted to the growth of apples. Certain loose, sandy areas in Germany which were considered waste lands, now raise tremendous crops of asparagus. The best truck lands of the Atlantic seaboard will not successfully raise wheat or grass. Furthermore, the same land, while decreasing in its ability to raise a given crop, may be increasing in its ability to raise another crop.
>
> In estimating the value of land, its natural fertility must be considered — that is, its ability to withstand cropping for many years, and its condition — that is, whether its crop-producing power has been temporarily reduced by

[10] Hunt, *How To Choose a Farm*, p. 16.
[11] Hunt, *How To Choose a Farm*, pp. 33–34.

bad husbandry or otherwise, and how much it will cost in fertilizers and in management to bring the land into a proper state of productiveness.[12]

The physical properties of the soil affect materially the economy of production. In England it is estimated that on heavy clay soils one team is needed for each sixty acres under cultivation; while on sandy soil one team for eighty acres is needed. . . .

Physical properties of the soil also affect the number of days in the year during which labor can be applied to it. Sandy and loamy soils can be worked earlier in the spring and less time must elapse after each rain before they can be worked again than with clay soils. In the case of clay soils, therefore, the same labor must be done in a less number of days, and extra men and teams must be kept to be ready to do this work.[13]

Hunt followed up the discussion of points to be considered in choosing a farm with a presentation of methods of examining a farm with a soil map in one hand and a soil auger in the other.

Having discussed all the points in his score card, Hunt described the agricultural geography of the various parts of the United States. The following is a typical statement in Hunt's regional studies:

The land area of the New England states is principally adapted to the growth of trees and grass.[14]

While the states of New York, New Jersey and Pennsylvania are, like the New England states, adapted to trees and grass, and therefore to the farm industries based on trees and grass, yet these southern North Atlantic states have a greater adaptation to the cereals than New England. New England has one acre in sixteen of its improved area in wheat, maize, oats, rye, barley and buckwheat; while the remaining three North Atlantic states have one acre in four. This adaptation to the growth of the concentrated foods is most marked in southeastern Pennsylvania and in western New York and Pennsylvania, where the physiographical features are similar to those of the Ohio Valley.

The North Atlantic states as a whole, however, fall far behind the North Central states in their economic adaptation to the raising of cereals.[15]

In presenting a picture of farming in various parts of the United States Hunt gave some of the history as well as the geography of each region. He included transportation and market facilities in the picture and gave emphasis to the type of farming suited to each region. In fact, Hunt's book may be said to be the pioneer treatment of types of farming in the United States, as well as the one book devoted entirely to the subject of how to choose a farm.

Fred W. Card

Fred W. Card included a chapter on the choice of a farm in his book on farm management.[16] That chapter points out several things to look for, although it touches but lightly the economic principles involved.

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[12] Hunt, *How To Choose a Farm*, pp. 36–40.
[13] Hunt, *How To Choose a Farm*, pp. 47–48.
[14] Hunt, *How To Choose a Farm*, p. 130.
[15] Hunt, *How To Choose a Farm*, p. 140.
[16] F. W. Card, *Farm Management* (New York: Doubleday, Page and Co., 1907), pp. 56–69.

George F. Warren

G. F. Warren, in his book on farm management in 1913, devoted two chapters to choosing a region and choosing and buying a farm.[17] Warren covered briefly most of the points presented in Hunt's book on *How To Choose a Farm.* Warren used Hunt's score card in a slightly modified form and discussed the same points in general with some few additions and some omissions, but, of course, in Warren's own way and with many differences in illustration and some difference in emphasis. Hunt had given more emphasis to the means of calculating how much to pay for a given farm and had called attention to choosing land with some regard to the ability of the farmer. Warren emphasized the importance of securing a good farm without discussing the cost. Everything considered — the concreteness of the material presented, and the analysis of the physical, biological, and economic and social aspects of the subject — Hunt's presentation surpassed that of any of the other pioneers in point of usefulness in the time in which it was written.

E. H. Thomson

A few other contributions to the subject of how to choose a farm should be mentioned. Before leaving the Office of Farm Management of the United States Department of Agriculture in 1919, E. H. Thomson prepared a bulletin[18] which discussed many of the same points Hunt covered in his book. Thomson asked particularly that three points be given special attention: That the farm provide for an adequate size of business, high quality of business, and adequate diversification of farm business. That is, Thomson held in mind the primary conditions of successful farm management as stressed at that time by those who were studying farm management by the farm survey method. He pointed out the importance of selecting a farm which would provide the physical basis of successful operation.

F. F. Elliott

Two important contributions to facts essential to the choice of a farm are soil surveys and studies dealing with types of farming. Soil surveys, made jointly by the United States Department of Agriculture and the various states, have been extended to larger and larger areas. Within the surveyed areas the farmer became less dependent upon his own soil auger in determining the qualities of the soil. F. F. Elliott made a special study of types of farming in every part of the United States for the census of 1930.[19] That study was particularly useful in showing the regions in which to buy a farm after the farmer had decided upon the type of farming he wished to practice.

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[17] G. F. Warren, *Farm Management* (New York: The Macmillan Company, 1913), pp. 494–534.
[18] E. H. Thomson, "Selecting a Farm," U.S.D.A., *Farmers' Bulletin* 1088 (Washington, 1920).
[19] F. F. Elliott, *Types of Farming in the United States,* U. S. Bureau of the Census, 15th Census, 1930 (Washington, 1933).

7.

Choice of Farm Enterprises

In the study of the economics of agricultural production the principles underlying the combination of enterprises hold the center of the stage. The principle of division of labor, central in classical economics of industry, is of little importance in agricultural production. Farming is usually diversified, that is, several enterprises are combined into a system of farming in a given locality. Different localities, with different soil, climate, topography, or market conditions, are suited to different types of farming. There are usually several crops from which to choose in planning a cropping system, and several kinds of livestock enterprises from which to choose. At times, in a given area, the problem of enterprise selection may have seemed to have been solved. But sooner or later changes in price relations have made necessary the readjustment of the cropping system or of the livestock enterprise. The history of agriculture is first of all the story of readjustments due largely to changed conditions in the markets.

Francis A. Walker

Francis A. Walker recognized the problem of enterprise selection when he said:

> To ascertain what are the adaptations of any piece of ground to the cultivation of any single crop, and what variety and order of crops will best bring out the capabilities of soil and climate in the production of wealth, may seem a simple thing, but it is not. It is so far from being a simple thing that a race of men, not barbarous, but, as we call them, civilized, may inhabit a region for an indefinite period and this thing not be done at all. Such may be the lack of enterprise, such the force of tradition, that crops may be cultivated from generation to generation, and from century to century, while yet the question has never been fairly determined whether the agriculture of the district might not advantageously be reinforced, and the soil be relieved, by the introduction of new crops, or even by throwing out the traditionary crops altogether.
>
> . . . A certain rough canvass of the agricultural capabilities of any district is easily made, and a process of elimination early takes place by which certain

crops are discarded, for once and for all, as hopeless. But among the great variety of crops which may be cultivated in any region, justly to discriminate between the good and the very good, and to reject those which, tho within the "limit of tolerance," as the money-writers say, are yet on the whole, and in the long-run, not profitable, demands long, careful, and elaborate experimentation. Beyond this is the selection of varieties within the retained species, in which alone may reside the possibilities of success or failure; the fortunate choice of varieties, among the almost indefinite number, often making all the difference between profit and no profit.

To do this work satisfactorily requires great mental enterprise and what we may call curiosity, a natural delight in experimentation, a ready apprehension combined with persistency, in due measure, and with a sound judgment. To do this work both well and quickly, being neither slow in testing new and promising subjects, nor easily discouraged by the accidents which beset initiation and experiment, nor yet reluctant in drawing the proper inference from failure, would task the intellectual powers of any race of men. . . .

During the colonial period the work of experiment had so far advanced that every crop but one (sorghum) now recognized in the official agricultural statistics of the country was cultivated within the region east of the Alleghenies. In the long course of experiment which had resulted in the naturalization of the crops now so well known in New England, the following had, according to Prof. Brewer, been tried and rejected from our agriculture, viz., hemp, indigo, rice, cotton, madder, millet, spelt, lentils, and lucern.

But while so much of the adaptations of our general climate to agriculture had been thus early mastered, much in the way of studying the agricultural capabilities of the infinite varieties of soil subject to this climate remained to be done within the region then occupied; while with every successive extension of the frontier of settlement the same work has had to be done for the new fields brought under cultivation. To say with what quick-wittedness and openness of vision, what intellectual audacity yet strong common-sense, what variety of resource and facility of expedients, what persistency yet pliancy, the American farmer has met this demand of the situation would sound like extravagant panegyric. No other agricultural population of the globe could have encountered such emergencies without suffering tenfold the degree of failure, loss, and distress which has attended the westward movement of our population during the past one hundred years.[1]

William H. Brewer

W. H. Brewer worked with F. A. Walker on the census of agriculture for 1880, and he went into more detail on the economics of diversified farming than did Walker:

By the succession and rotation of crops the land will produce a much greater aggregate product and the quality of the crops will be better.

The waste materials of one product or crop may be used for the production of another, as the unmarketable grain and straw may be used as forage for domestic animals, and animal refuse be used for manure. There is, therefore, a more complete utilization of the material.

If crops grown on the land are sold off, then exhaustion takes place; but by a rotation of crops this is delayed, and by manuring with home-made manures it is still more delayed.

[1] F. A. Walker, "American Agriculture," *Princeton Review,* pp. 255–56 (May 1882). This article, with an addendum, was reprinted in the *Agricultural Review and Journal of the American Agricultural Association* 2:89–104 (August 1882), and also in the U. S. Census Office, 10th Census, 1880, *Report on the Productions of Agriculture* (Washington, 1883), 3:28–33.

There is a better distribution of labor. The crops are planted at different times, grow at different seasons, are harvested in different months, and the successive work on such a farm can be better done than if all came at the same time. Where any one crop is grown in undue proportion in respect to the others in any region or district, the labor necessary for the production of that crop is dearer, because it is not continuous, and agriculture becomes an intermittent industry, with all of the evils attached to that condition.

The crops are not all liable to the same mishaps. Each crop has its preference of weather, each its own possibilities of danger, each its own enemies, diseases, and mishaps, and it is rare that in our climate a drought or other untoward condition of the weather is so prolonged as to interfere seriously with all the crops. A mishap attending any one may not extend to all, and the failure of any one crop through climatic or accidental causes not unfrequently brings with it increased production of the others. A good year for one crop is not necessarily a good year for another, and each and every one fails sometimes; but by a proper combination the business, as a whole, goes on, and the success of one mitigates the losses by another. Moreover, the mishaps which may occur to any one crop can be very often lessened by the farmer if the relative amount of this crop be small. For example, if rust strikes his wheat before it is ripe, it may be cut early, and the loss in that way be reduced to its least; if an early crop is killed by a late frost, a crop of a later kind may be put on the land, and so on through a multitude of adaptations possible where the acres are not too many and the productions are sufficiently varied. In a variety of ways mishaps which would be total disaster in a region growing but one or two crops are relatively much less of a calamity in a district of smaller farms and of more varied production.[2]

In discussing the cost of producing farm products in the census report, Brewer touched upon the problem of how farmers determine which enterprises to combine in a system of mixed farming. He pointed out the difficulty of determining the cost and profit of each product and indicated that while farmers do make readjustments from time to time, they must feel their way.[3] It seems to have been clear to Brewer that cost accounting should be looked to as a source of information in making a choice of enterprises. He recognized the complementary and supplementary character of enterprises but apparently did not realize, as has been realized more recently, the significance of this fact from the standpoint of the relations between costs and prices. Brewer believed there was a definite tendency for costs "during a series of years" to be "a little less than the average market price of that crop in that place during those years."[4] That economic generalization was, of course, simpler than the problem. It appears that Brewer overlooked the fact that a crop or other enterprise that fills in a gap in the demand for the farmer's labor and equipment may add to the total annual net profit of the farm without paying its full pro rata share of the costs, and by the same principle, the main crop can and needs to demand an average price correspondingly higher than cost based upon the average cost per

[2] W. H. Brewer, "Report of the Cereal Production of the United States," U. S. Census Office, 10th Census, 1880, *Report on Productions of Agriculture* (Washington, 1883), 3:522.
[3] Brewer, "Cereal Production," pp. 436–38.
[4] Brewer, "Cereal Production," p. 436.

unit of the factors used in its production. Brewer came closer to the truth in the phrase "The different crops are so correlated, and the nature of the industry is such, that the cost of each one separately cannot be specially stated. . . ."[5] Brewer's sentence quoted above implied that, regardless of this correlation, the cost-price relation of each crop tended to work itself out with a trend toward a close relation of cost and price. The solution, of course, lies in turning the costing system away from specific costs to the relative profitableness of competing enterprises as a basis of choosing from each competing group the one which, when fitted into the correlated system, will add most to the total net profit of the farm. This subject will be dealt with more specifically in the section on cost accounting.

That discussion of the economics of diversified farming by Brewer would have been very illuminating to students of agricultural economics had it been brought to their attention.

Henry C. Taylor

In 1896, Henry C. Taylor's interest in the economics of crop selection and the organization of a system of crop rotation was aroused by an effort which was being made at that time to introduce sugar beets into the Corn Belt of the United States. Sugar beets were being grown experimentally on the Iowa Agricultural Experiment Station farm while Taylor was a student there. In 1897, when James Wilson, who had been Dean and Director of the Iowa State College, became Secretary of the United States Department of Agriculture, he pushed with great energy the work of establishing the beet-sugar industry in the United States. Farmers were "feeling their way." Little progress was made in the Corn Belt. Farmers asked: What is the advantage of introducing sugar beets?

Taylor wanted to find the answer to that question. Three years as a graduate student at the University of Wisconsin — where he devoted a great deal of time to the history of agriculture — followed by 20 months as a student in England and in Germany, gave the opportunity for Taylor to study the subject of crop selection in the light of conditions in Europe. Secretary Wilson had given Taylor an honorary commission to study agriculture in Europe and had expressed his interest in the beet-sugar industry.

At that time beet-sugar production was a great industry in Germany. Taylor spent considerable time studying the production of sugar beets, noting the quantity of hand labor required and the time of year when the crop made demands upon the farmer's time and that of his farm power and equipment.

Attention was given to other crops grown on those German farms and the position which sugar beets occupied in the system of crop rotation. Taylor had previously studied the history of crop rotation

[5] Brewer, "Cereal Production," p. 436.

in northwestern Europe. He was familiar with the fact that for centuries various modifications of the old Roman three-field system of crop rotation had prevailed down to the eighteenth century when the "new agriculture" was heralded in England by Jethro Tull, Viscount Townshend, Robert Bakewell and Arthur Young. The three-field system consisted of a winter wheat crop, followed by a spring grain crop such as oats or barley, followed by a fallow. Each year a third of the plow land was in winter wheat, a third in spring grain, and a third was, at its best, cultivated about three times during the season to destroy weeds and give tilth to the soil. Light sandy fields might be grazed by sheep to keep down weeds and pack and fertilize the light soil. In any case, the essential feature was two crops in three years, with a third of the land growing no crop but receiving attention preparatory to the next wheat crop. In the new agriculture in England the fallow was replaced by a root crop, often called a fallow crop. Roots could be cultivated while growing and thus improve the land in the manner of a fallow and at the same time produce a crop of value for feeding livestock.

That was only one of the changes brought by the new agriculture. Root crops provided only a part of the ration needed for winter feeding of livestock. Clover was introduced as valuable feed for livestock. That resulted in the replacement of the ancient "three-field system" by a "four-course system." In the new crop rotation the fallow crop of turnips or other root crop was not off the land in time to sow winter wheat. Spring grain seeded with clover followed the root crop. In the autumn of the second year and in the summer of the third year clover furnished pasture and a crop of hay and was plowed under in time to prepare the land for winter wheat. That English system of farming was introduced into Germany by Albrecht Thaer, who wrote a three-volume work on English agriculture at the beginning of the nineteenth century.[6] Thus root crops became an important factor in the new agriculture in Germany, replacing the bare fallow.

To an American interested in studying the question of introducing sugar beets into the farming system of the Corn Belt of the United States, the place of the root crop in the German field system was interesting. The question at once suggested itself: Why was the root crop not generally introduced on farms of the United States? The obvious answer was Indian corn. The growing of Indian corn, a row crop with clean culture, provided the American farmer with all the benefits of a bare fallow and a crop of grain and fodder of first importance.

Indian corn had been introduced into parts of Europe where

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[6] Albrecht Thaer, *Einleitung zur kenntniss der englischen landwirtschaft-und ihrer neueren practischen und theoretischen fortschritte in rucksicht auf vervollkommung deutscher landwirtschaft fur denkende landwuirthe und cameralisten.* 3 v. (Hannover: Ben den Gebrudern Hahn, 1798–1804).

climatic conditions were suited to its growth, but it could not be grown successfully in northwestern Europe. Thus the student had brought before his mind the fact that in Germany sugar beets had to compete only with the potato crop and with root crops grown for feeding livestock, while in the Corn Belt of the United States sugar beets had to compete with Indian corn, which was the most profitable crop in that area and which occupied the same position in the field system as did root crops in northwestern Europe.

The question then resolved itself into determining whether sugar beets could compete with Indian corn where corn was king. Sugar beets might yield more dollars per acre than corn, but the greater cost per acre had to be considered. The profit per acre might be greater from beets than from corn and yet corn pay the farmer better because he could make a profit on so many more acres. That was just an analysis of the question based upon study of historical and comparative agriculture. The analysis needed to be followed with cost accounting studies which were ultimately made by Taylor on his own farm.

This story is told to give the background in terms of which Taylor was thinking while developing the theory of competing and non-competing crops, which he believed to be basic to the understanding of the economics of choice in selecting crop and livestock enterprises. Taylor's ideas on crop selection and farm organization were first put into printed form for his students at the University of Wisconsin in January, 1903. The essence of his thesis follows:

> The first question the farmer has to settle is, "Which crops shall I produce in order to win the largest net return? . . ."
>
> . . . Cost, or cheapness of production, is not the one determining factor, neither is quantity of the product. The selling price would also be a poor guide in itself; but, when the cost of producing an article, the quantity which one man can produce upon a given area, the capacity of the crop to fit itself into the field system, and the farm price of the product are all taken together, it will be found that with prices as they are at a given time, some crops will make the farm yield a handsome profit while others can be grown only at a loss. The success of the modern farmer depends, then, upon his capacity to select and produce that crop or combination of crops which, one year with another, will make the farm yield the largest net return.
>
> In mechanical pursuits it is the common thing for each man to devote all his time throughout the year to the production of that one class of articles which he can produce to best advantage. Should the farmer confine himself exclusively to the production of that one crop which will yield the largest long time average net return? No. The production of any one crop requires the attention of the farmer for only a portion of the year, and various crops demand his attention at different times in the year, so that his labor, horses and machines are usually employed more economically in a system of diversified farming, than in a single crop system, even if the crop needing attention at one time is less profitable than that requiring attention at another time.
>
> The crops which require attention at the same time of year may be looked upon as a group of competing crops. Thus the crops which require cultivation for six or eight weeks during the early period of their growth,

such as corn, cotton, tobacco, potatoes, sugar beets, etc., may be classed together as a group of competing crops, because they compete for the attention of the farmer — for his labor, his horses, his tools and machinery. The winter grains, rye and winter wheat, or the spring grains, oats, barley and spring wheat, may be given as other groups.

We may call these separate groups non-competing groups, because the members of one group require the attention of the farmer at a different time than do the members of other groups. For example, corn, cotton, etc., do not compete with oats, barley, etc.

The farmer who seeks to use his labor and capital to the best advantage should select from each group of competing crops that one which will yield the largest average net return and should introduce as many non-competing crops into the field system as will yield a profit.

When this principle is followed it will often happen, that of two non-competing crops in the field system, one will yield a larger net return than the other. Yet when the year's accounts are balanced it will be found that the farmer's net returns are greatest when both crops are cultivated, even if one is less profitable than the other, for each crop represents the most profitable use to which the labor, horses, and machines can be put at the given time, and if not used in that way they must be put to a less productive use or to no use at all.

But of two competing crops, only the more profitable one should be produced. . . .[7]

Six months later Taylor's ideas were elaborated in relation to the question as to whether sugar beets should be introduced into the Corn Belt where beets competed with Indian corn.[8] In 1905 the subject was treated in *An Introduction to the Study of Agricultural Economics* and in 1919 it was still further developed, especially from the point of view of geographic factors influencing the choice of farm enterprises and types of farming.[9] In later editions of his book on agricultural economics, Taylor gave special attention to geographic factors influencing types of farming which resulted from the choice farmers made based upon climate, costs and prices, distance from market, and extent of area suitable for production of different crops:

> Viewed from a geographical standpoint, *it is generally true that, where two competing crops which are in general demand can be grown on the same land, prices will tend to be such that the one with the more limited total potential area will have its choice of territory. Its area will expand in spite of progressively less favorable conditions of production until rising costs and lower prices incident to increased volume of production prevent further expansion by throwing the advantage to the competing crop.*[10]

The influence of geographic factors on the choice of crop and livestock enterprises was discussed in the light of information presented on dot maps based upon census data.

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[7] H. C. Taylor, *Syllabus of Lectures on Agricultural Economics* (Madison: printed privately for class use, 1903), pp. 14–18.

[8] H. C. Taylor, "Conditions Affecting Sugar-Beet Culture in the United States," American Academy of Political and Social Science, *Annals* 22:179–87 (July 1903). Also reprinted in American Academy of Political and Social Science, *Publications* 389 (n.d.).

[9] H. C. Taylor, *An Introduction to the Study of Agricultural Economics* (New York: The Macmillan Company, 1905), pp. 65–77; H. C. Taylor, *Agricultural Economics* (New York: The Macmillan Company, 1919), pp. 43–53.

[10] H. C. Taylor, *Outlines of Agricultural Economics* (New York: The Macmillan Company, 1925), pp. 59–60.

Thomas Nixon Carver

T. N. Carver, in 1911, and G. F. Warren, in 1913, followed Taylor's analysis of the subject with their own. After discussing the physical and biological aspects of crop diversification, Carver mentioned:

> . . . that different crops require labor and attention at different times of the year. Suppose a farmer is located in a corn country. With a given labor force there is a pretty definite limit to the amount of corn which he can plant, cultivate and harvest. But if he grows nothing but corn, there will be times and seasons when there is no work to do, for example, between corn-plowing and corn-husking time. His labor power is going to waste at these times. If he can find another crop which will occupy his time during these intervals, he can grow it without adding to his labor force and without subtracting from his corn crop. Some form of small grain, preferably spring grain such as oats, or spring wheat where the climate is suitable both for spring wheat and corn, will fit in admirably with his plans. This grain can be sown in the early spring, before it is safe to plant corn, and the harvesting and threshing will come between corn plowing and corn husking.
>
> This situation gives rise to the distinction between competing and noncompeting crops. Two crops are said to be competing either when they consume the same properties of the soil or when they consume the same portion of the farmer's time; that is, when they demand his time and attention at precisely the same time of the year. Otherwise they are noncompeting crops. Two crops may be competing in one sense and noncompeting in the other. The ideal diversification is, of course, a combination of crops which are noncompeting in both senses. So important is this principle that it may be laid down as a rule that no farm will pay unless it provides steady and regular work for a fairly permanent labor force throughout the greater part of a year. Even dairying, which may be called a highly specialized form of agriculture, is seldom profitable unless combined with the growing of field crops of some kind for sale. The number of men necessary to do the milking evenings and mornings are more than enough to take care of the cows and grow feed for them. Unless some other products are grown the time of the men is not fully utilized. By growing field crops for sale, the cost of producing milk is divided with that of growing these other crops; or, to look at it in another way, these crops are by-products of milk and cost very little. . . . Where diversified farming means the growing of noncompeting crops, specialization is a long way off.[11]

George F. Warren

G. F. Warren's discussion of crop selection gave special emphasis to variation in the differences in the amount of labor and capital used per acre in producing various crops:

> The most important problem of the farmer, particularly of the American farmer, is how to get the most for his year's labor. If cherries give a net profit of $50 per acre, and hay a profit of $10, the farmer who refuses to raise cherries may still be wise, if cherries interfere with hay, because the time required to raise one acre of cherries may raise 10 acres of hay. There are some instances in which land is limited so that the acre basis has some importance, but is usually easy to either buy or rent land.

[11] T. N. Carver, *Principles of Rural Economics* (Boston: Ginn and Company, [1911]), pp. 237–38.

The results of a set of cost accounts on a 90-acre farm in 1909 are shown in Table 25. This farm had about 45 acres of tillable land. From the usual method of figuring profits per acre, it would appear as if this farmer should plant more apple trees, because apples gave him over six times the profit per acre that he secured from oats and hay. But for the time spent on it, timothy hay gave three times as much profit as the apple orchard. The word profit is here used in the correct sense. The hay paid for the use of the land, use of buildings, use of horses, machinery, all labor, interest on these costs for the time the money was invested, and all other costs, and, in addition, left a profit of 63 cents for each hour of labor. If we add this to the labor

TABLE 25

Comparison of Receipts and Profit per Acre With Profit per Hour of Labor

	Receipts per acre	Profit per acre	Profit per hour of labor
Orchard	$101.75	$38.28	$0.23
Oats	26.42	6.84	.33
Timothy hay	15.67	6.37	.63

cost of 18 cents an hour, we find that the hay paid all expenses except labor, and paid 81 cents an hour for labor or $8.10 for each ten-hour day spent on it. The orchard paid $4.10 for a similar day. In addition, this was known to be an average year for hay and oats and an extra good year for the orchard.

After studying these figures, the farmer very wisely decided to go in debt for another farm so that he could raise more oats, wheat, and hay. He preferred to sell his labor to the crops that paid best for it. The wisdom of this procedure was shown by the results of the next three years, for he made more than he could have made in twice the time with the small farm. . . .

Whether oranges, grapes, strawberries, potatoes, chickens or roses, or some other intensive crop, will pay better than corn, oats, wheat, hay, and cotton, and cows, is chiefly a matter of adaptation to conditions. There are conditions under which apples pay better than corn, just as there are conditions under which corn pays better than apples. But the average of success for a series of years in the best apple or orange regions does not appear to be any better than the average in the best corn or hay regions. The more speculative enterprises have more violent ups and downs, so that in some years they pay better and in some years they cause greater losses. *But there do not appear to be any types of farming that are regularly more profitable than other types, provided each type is conducted where it belongs.*[12]

Application of the Principles

The general principles of crop selection and the choice of other enterprises having been accepted, the detailed work of determining which were competing and which were noncompeting crops, and which crop in each competing group would pay best, was yet to be carried out. At Wisconsin, at Cornell, and in the United States Department of Agriculture records were kept on selected farms showing the amount of man labor and of horse labor spent upon each of the farm enterprises. The time of year each crop made

[12] G. F. Warren, *Farm Management* (New York: The Macmillan Company, 1913), pp. 148–52.

demands for labor was recorded. The same set of records showed the rate per hour the various enterprises returned per man hour of labor after deducting other costs. In 1911 Taylor published some preliminary results of labor records secured jointly by the University of Wisconsin and the United States Department of Agriculture.[13]

The subject of the choice of enterprises has since been developed with a background of facts drawn from studies of labor demands of the various enterprises and other elements of cost. For instance, the Bureau of Agricultural Economics of the United States Department of Agriculture, in co-operation with agricultural experiment stations in Minnesota and Kansas, led in developing the budgeting system of enterprise selection and combination in a given area.[14] The budgeting system is based upon detailed cost accounting and the outlook reports, including historical, geographical, and price data. The application of accounting to enterprise selection will be described in the section on cost accounting.

[13] H. C. Taylor, "The Place of Economics in Agricultural Education and Research," Wisconsin Agr. Exp. Sta. *Research Bulletin* 16 (Madison, 1911), pp. 119–25, including charts showing the distribution of labor on six crops.

[14] G. A. Pond and J. W. Tapp, "A Study of Farm Organization in Southwestern Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 205 (St. Paul, 1923); W. E. Grimes, J. A. Hodges, R. D. Nichols, and J. W. Tapp, "A Study of Farm Organization in Central Kansas," U. S. D. A., *Department Bulletin* 1296 (Washington, 1925).

8.

Intensity of Culture

PROPORTIONS IN WHICH land, labor, and capital goods should be brought together in the organization of agricultural production is a subject which has been under discussion for a long time.

Washington and Jefferson

George Washington and Thomas Jefferson discussed this subject in correspondence with Arthur Young in the late years of the eighteenth century. Their thought on the subject was stimulated by the criticism of English writers. Washington said:

> An English Farmer must entertain a contemptible opinion of our husbandry, or a horrid idea of our lands, when he shall be informed that not more than 8 or 10 bushels of Wheat is the yield of an Acre; but this low produce may be ascribed, and principally too, to a cause which I do not find touched by either of the Gentlemen whose letters are sent to you, namely, that the aim of the farmers in this Country (if they can be called farmers) is not to make the most they can from the land, which is, or has been cheap, but the most of the labour, which is dear, the consequence of which has been, much ground has been *scratched* over and none cultivated or improved as it ought to have been; Whereas a farmer in England, where land is dear and labour cheap, finds it his interest to improve and cultivate highly, that he may reap large crops from a small quantity of ground. . . .[1]

Jefferson wrote to Washington:

> Where land is cheap and rich and labour dear, the same labour spread in a slighter culture over 100 acres will produce more profit than if concentrated by the highest degree of cultivation on a small portion of the lands. When the virgin fertility of the soil becomes exhausted, it becomes better to cultivate less, and well: the only difficulty is, to know at what point of deterioration in the land, the culture should be increased, and in what degree.[2]

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[1] George Washington, letter to Arthur Young dated Dec. 5, 1791 in *The Writings of George Washington From the Original Manuscript Sources,* 1745–1799, ed. by John C. Fitzpatrick (Washington, 1939), 31:440.

[2] A letter from Thomas Jefferson to George Washington, dated June 18, 1792, in George Washington, *Letters From His Excellency General Washington, to Arthur Young, Esq. F. R. S.* (London: B. McMillen, 1801), p. 88.

We should not conclude from this that Jefferson thought it would pay to farm land more intensively just because it had become exhausted, but rather because land had become scarce. This can be inferred from another statement of Jefferson in a later letter to Washington, dated June 28, 1793, which reads:

> Mr. Young must not pronounce too hastily on the impossibility of an annual production of £750 worth of wheat coupled with a cattle product of £125. My object was to state the produce of a *good* farm, under *good* husbandry as practiced in my part of the country. Manure does not enter into this, because we can buy an acre of new land cheaper than we can manure an old acre. Good husbandry with us consists in abandoning Indian corn and tobacco, tending small grain, some red clover following, and endeavoring to have, while the lands are at rest, a spontaneous cover of white clover.[3]

British travellers continued to criticize the low degree of intensity of culture on American farms, while American writers were ready to explain the American system of farming in terms of the cheapness of land and scarcity of labor. In 1839 Archibald Russell said that in the United States "the value of labour is so great, and the cost of land so trifling, that many alterations in the proportion which these elements bear to each other, have necessarily been established."[4]

Census of 1860

In the report on the census of agriculture for 1860, published in 1864, the following statement was made defending the American extensive system of farming, although it was admitted that the soil was being exhausted:

> . . . it is evident that the *intensive* system of agriculture which is practiced in some older and more densely populated countries, where labor is abundant and the land mostly under cultivation, cannot, as a general rule, be profitably adopted at present in this country. It has been said that American agriculture is half a century behind that of Great Britain. In one sense this is, perhaps, true. Our land is not as thoroughly under-drained, manured, and cultivated as that of England, Scotland, or Belgium; but we can, and do now, produce a bushel of wheat at much less cost than the most scientific farmer of England can by the best approved method of cultivation, *even if he paid nothing for the use of his land.*
>
> We do not contend for a superficial system of agriculture. All that we ask is, that those who censure our farmers for not cultivating and enriching their land more thoroughly, should take into consideration the circumstances which have surrounded us. High farming involves high prices. The system of cultivation and manuring which is profitable in Great Britain would not be remunerative in the State of New York, because labor is higher and produce lower; and the system which is profitable in New York might not be advantageous in Iowa. An artificial manure that could be profitably used on wheat which brings $2 per bushel, might prove a very unprofitable application where wheat is worth only $1.50 or $1 per bushel. In the State of New York, where land is comparatively high and prices good, there are

[3] Washington, *General Washington to Arthur Young*, p. 88.
[4] Archibald Russell, *Principles of Statistical Inquiry* (New York: D. Appleton and Co., 1839), p. 99.

many instances where $20 to $30 per acre have been expended in underdraining, with great profit. But it does not follow that the same expenditure would be advisable in a section where the best of land can be purchased in fee simple for $10 per acre. The same is true of all other improved processes of agriculture. Their adoption is simply a question of profit and loss. Where land is cheap and rich, it will not pay to expend much labor and money in making or in purchasing manure.

But, it may be asked, "Will not the practice of raising crops without manure impoverish the land?" Certainly it will; but our hardy pioneers, having enjoyed the cream of the soil as a reward of their enterprise, go into a yet newer country, cut down the original forests, clear up the land, and raise all the grain they can. The money thus obtained is expended in the construction of roads, houses, barns, schoolhouses, churches, and colleges. Smiling villages and populous cities spring up and in a few years the comforts, convenience, and even luxury of civilization are enjoyed — all the result of wealth which has been dug from the soil.[5]

William H. Brewer

W. H. Brewer discussed as follows the intensity of culture and diminishing returns:

On all ordinary farms "it pays to farm better" up to certain limits; this passed, increased production is only secured at an unprofitable expenditure. To illustrate my meaning: A certain grade and style of farming on a given farm may result in an average produce of, say, sixteen bushels of wheat per acre, and this amount may be grown with profit. With more care, more manure, and better tillage it might be made to produce twenty bushels per acre — an increase of 25 per cent in the crop at less than 25 per cent additional expense. If we continue to increase the production by still greater care, the expense increases faster than the product does, and a limit is soon reached, beyond which it does not pay to go; but each district, almost each farm, is a law unto itself in this matter. The farmer feels his way, the limit depending much upon the sagacity of the farmer himself.[6]

The difference in the density of population also regulates the intensity of the farming. Where the population is very dense, and must be fed from the soil, there farming must be intense, no matter how much it costs, or the people will starve. In this country the abundance of new land, and the ease with which it may be acquired, has prevented an intense farming. It is this, and not a lack of either intelligence or of enterprise, that gives us a low average yield of grain per acre, compared with that of the more densely populated agricultural districts of Europe. Wherever it pays to farm more intensely American farmers are not slow to see it, but it is curious to see how many who discuss this matter entirely ignore the great natural law that as the methods of farming become more and more intense the increase of crop is not proportionate to the increase of cost in producing it.

A given soil will easily produce a certain average of crop with a certain amount of labor and expense. We may increase the labor and expense, and for a time get a more than corresponding increase of crop. If we continue in the same direction, we soon reach a point beyond which the increase in yield is not proportionate to the increase in expense, but grows less and less, and at last a point is reached beyond which no amount of additional expense will increase the average yield. In short, there is no limit to the expense

[5] U. S. Census Office, 8th Census, 1860, *Agriculture of the United States in 1860* (Washington, 1864), p. viii.

[6] W. H. Brewer, "Report of the Cereal Production of the United States," U. S. Census Office, 10th Census, 1880, *Report on Productions of Agriculture* (Washington, 1883), p. 438.

that may be applied to the production: there is a limit to the average yield, and even to the possible yield, and the ratio of cost to production varies all along the line. We have our droughts and our mishaps, but our less intense system of agriculture, under our system of land tenure, is more flexible, and can stand shocks another system might not sustain.[7]

The Classical View

The pioneers in agricultural economics, being interested in efficient organization and operation of individual farms, raised the question: In the light of the existence of increasing and diminishing returns, how can a given farmer determine the proper degree of intensity of culture on a given farm in producing a given crop? The law of increasing and diminishing returns per unit of application of labor and capital to land, as stated by the classical economists, was accepted as being generally true under the assumptions laid down. Then the problem was to determine just how far down the scale of diminishing returns farmers should go in adding increments of labor and capital to a given area of land. At first, in the light of classical economics, the problem seemed to be relatively simple. It appeared to be correct, following classical analysis, to say that the farmer should apply additional increments of labor and capital to a given piece of land until the product attributable to the last increment at current prices was just enough to pay costs. This would certainly produce the maximum product, above total cost, per unit of land. But would it yield the farmer the maximum profit for his efforts?

Classical economists had not injected into the discussion the idea of variation in the efficiency of farmers. Men of varying efficiency cultivate land of varying degrees of productivity. Under these conditions, how shall the point be determined where a superior farmer should stop adding units of the other factors to land in order to win the maximum profit for his efforts? With the assumption of variation in efficiency of farmers, which can be measured in terms of their product per unit of cost on given grades of land, the classical theory, as interpreted above, fits only the marginal farmer — that is, the farmer whose costs are assumed to equal the market price. A new search had to be made by the pioneers for a principle which would fit all grades of farmers.

Another complication, like unto the first, arose out of the fact that in the choice of crops and organization of a system of mixed farming it often happened that certain crops, such as oats in the Corn Belt, paid, one year with another, less than their pro rata share of the costs of production, while corn paid on the average appreciably more than its pro rata share of the operating costs. Under these circumstances there is no validity in the idea that the application of labor and capital to land in the production of oats by the marginal farmer to the point where the additional product would equal the specific cost

[7] Brewer, "Cereal Production," p. 524.

of the additional unit, would yield maximum profits. Yet it paid to grow oats and there was some degree of intensity of culture on given land at a given time by a given farmer which would add the most to the farmer's annual profit in producing oats.

The problem is a complex one. Our purpose here is to indicate how the pioneers wrestled with this question with a view to producing an analysis which would give a starting point for gathering facts essential to a concrete answer to the question of the most profitable degree of intensity of culture for a given farmer at a given time and place. H. C. Taylor's early statement on this subject:

Henry C. Taylor

Intensity of culture refers to the quantity of labor and capital employed upon a given area of land. Where a small amount of labor and capital per acre is employed, we call the system extensive agriculture. Where a large amount is expended per acre, the culture is said to be intensive. Having decided upon the crops which are to be grown, the next important question is, "How much labor and capital should be employed per acre in the production of any particular crop in order to win the largest net return?" . . .

It is a familiar fact that in the production of corn, for example, the application of one dollar's worth of labor and capital to an acre of land will ordinarily produce very little or no crop at all. It is possible that two dollars' worth will produce a small crop, but the third dollar's worth will increase the product more than the second, the fourth more than the third, and so on until the point of stationary returns has been reached. After this point has been reached the succeeding units continue, for a time, to add to the total product, but each succeeding unit is less and less productive until a point may possibly be reached where further application will add nothing to the total product. Thus the returns to succeeding units of labor and capital in agricultural production follow the law of increasing returns until the point of stationary returns has been reached, after which the law of diminishing returns operates.

Let us suppose, for example, that the point of stationary returns, that is the limit of increasing returns and the starting point of diminishing returns. is reached when six units of labor and capital have been applied. Then according to the law of increasing returns each succeeding unit of labor and capital will be more productive than the previous one until six have been employed, after which the law of diminishing returns operates and each succeeding unit will show a smaller product than the one immediately preceding it. To state the same thing in more concrete form, the fifth unit of labor and capital will increase the product more than the fourth, and the sixth more than the fifth; but the seventh will not increase the product so much as the sixth, and the eighth will be less productive than the seventh.

This may be illustrated by means of a diagram [See p. 127].

In Figure 1, the area *AEF* represents the product of the first unit of labor and capital. Area *EXGF* represents the quantity of the product of the second unit. And thus the product of each succeeding unit is greater than the one preceding it until six units have been expended, after which each succeeding unit is less productive than the one immediately preceding it.

What degree of intensity is most profitable? How much labor and capital should be applied to an acre of land in the production of corn, or in the production of wheat, or any other crop, in order that the farmer may win the largest total net return? . . .

For the sake of simplicity let us suppose that the farmer can get all the land he may want to use without paying anything for it. Under such circumstances how much labor and capital will he expend upon each acre of land? Let us take the case we have before us in Figure 1, and suppose the farmer has one thousand units of labor and capital to expend in agricultural production. With free land at his disposal, how many acres will he use and how many units will he employ upon each acre? Will he apply five units of labor and capital per acre and use two hundred acres of land? No, his capital will produce a greater total product when he applies six units to each acre and confines himself to one hundred and sixty-six and two-thirds acres. But will this make his labor and capital most productive? At the first thought we may say yes, because the seventh unit is not so productive as the sixth, but when we look more closely into the matter we see clearly that

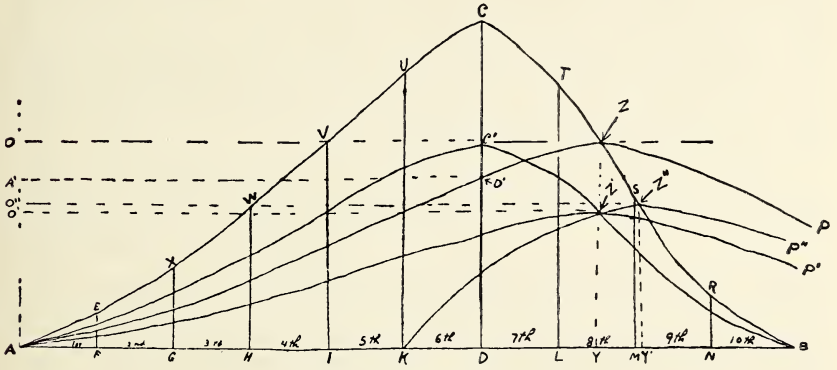


Figure 1

there is no good reason for ceasing to apply more units of labor and capital simply because the point of diminishing returns has been reached. The seventh unit is less productive than the sixth, but it may be more productive than any one of the first four units, and the average product per unit of labor and capital will be greater when seven units have been applied than when six only have been applied. Hence the total product of the thousand units will be greater when seven units have been applied to each acre and only one hundred and forty-three acres of land employed.

But at what point shall the farmer cease to increase the application of labor and capital to a single acre? It is obvious that if all the labor and capital were applied to one acre it would not be so productive as when he employs more acres and limits the number of units applied to each acre. But what is the limit? It is true that in Figure 1 the sixth unit is more productive than any unit before or after it, but all units cannot be sixth units; the first, the second, and the third are indispensable. *It is the maximum average return which we must keep in mind.* The average product per unit increases rapidly until the sixth unit has been employed, and then less rapidly until a point is reached where the slightest increase in the application of labor and capital will not increase the average product and, because the law of decreasing returns is operating, the application of another unit however small will reduce the average product of all units applied.

The thousand units of labor and capital are used in the most productive manner when the acreage is so limited that the number of units applied

to each acre shall be such as to produce the maximum average product per unit. This point of the maximum average product per unit will be some place on the line *CB* in Figure 1, let us say at the point *Z*. Then let us draw a curved line from *A* to *Z* in such a manner that the distance between lines *AZ* and *AY* shall at all points be such that the rectangles formed by drawing a line, *OZ* for example, through the curve *AZP* will represent the total product produced when applications have reached that point; and that part of the rectangle lying between the lines *VI* and *UK*, for example, will represent the average per unit applied up to that point. As illustrated in Figure 1, the curve of averages reaches the highest point at *Z*, and the highest average product per unit of labor and capital is gained by employing seven and one-half units per acre. After the point *Z* is reached the line of averages *ZP* falls, and further application of labor and capital will reduce the average product per unit. Thus when there is no rent to pay, the application of labor and capital should increase until the point of maximum average returns per unit is reached and there it should stop. This is the most extensive agriculture that can be profitable under any circumstances and the most intensive that can be profitable to the farmer where nothing is charged for the use of land. But, may not the case be somewhat altered where land has a value placed upon it, and where one must pay for its use, either in the form of rent or of interest on its capital value.

Let us take first the case where a share of the crop is given for the use of the land. Under this condition, will more or fewer units of capital be applied to each acre of land? The farmer will still seek the largest net return, and this means he will increase the labor and capital until the point of maximum average *net* returns per unit of labor and capital has been reached. The point will be reached after the application of the same number of units as in the case of free land, for the share is subtracted from the product of each succeeding unit, and the result is the same as reducing the productivity of the land one-third. To illustrate this point, draw a curved line from *A* to *B*, in Figure 1, at such a distance from lines *ACB* and *AB* as to leave two-thirds of the area of each section between the lines *AB* and *AC'B*. Then draw a line through the points of average net returns per unit thus far employed, in the same way as the line of average gross returns per unit was drawn. This new line of averages will reach the point of maximum net returns per unit when the line *AZ'P'* crosses the line *AC'B*. The point *Z'* will be one-third the distance from *Z* to *Y* and neither to the right nor to the left. This means that the point of maximum net returns is reached, in the case of a share tenant, after the application of the same number of units of labor and capital as yield the largest average gross product. This means also, that share tenancy and the most extensive culture will usually be found together.

Will the result be the same in case of cash rent? No, not exactly. Suppose the cash rent is three dollars per acre. This rent is paid once for all. We may think of it as being paid out of the product of the first five units of labor and capital. The farmer receives no return upon his labor and capital until the rent is paid. If he ceased to apply labor and capital after five units have been applied, the product would just pay the rent. Hence in this case, the lines passing through the points of average product will start at point *K* where the line *UK* crosses the line *AB*. After the application of the sixth unit the net return per unit applied will be represented by one-sixth of the area *UKDC*. After the application of the seventh unit it will be one-seventh of the area *UKLT*. Thus the line will rise rapidly until the line *CD* is crossed, after which it will continue to rise less rapidly until the line *CB* is crossed, after which it will fall. Thus the point *Z''* will be farther to the right than points *Z* and *Z'*, and the maximum average net return per unit will be gained by more intensive culture in case of a fixed or cash rent than in case of a

share rent, because the farmer gets all of the product of the last unit in case of cash rent, whereas he gets only a share, say two-thirds, in the case of share rent. In case the farmer owns the land and counts interest upon his capital invested in land, the conditions will be the same as if he were paying a fixed or cash rent. The intensity of culture will vary with the value of the land, in case the farmer owns the land he cultivates, or it will vary with the amount of the rent where a fixed rent is paid. The higher the value of the land, or the higher the rent, the greater the degree of intensity. . . .[8]

Thomas Nixon Carver

While Taylor was preparing his syllabus and giving his initial course in agricultural economics at the University of Wisconsin in 1902–03, T. N. Carver was planning a course for the next semester at Harvard. Taylor sent a copy of his syllabus to Carver. It was a matter of interest to Taylor, therefore, to know what Carver would teach on the subject of intensity of culture in agricultural production. Before the end of 1904 Carver published a book[9] in which 49 pages were devoted to the subjects of diminishing returns and the proper degree of intensity of culture. Taylor read the chapter with great interest. Carver presented the following comments and table illustrating increasing and diminishing *average returns* per unit of labor of man and team with tools:

It is well known to practical men that a niggardly application of labor and capital to a piece of land in the cultivation of any crop is little better than wasted, because it will produce so little in proportion to itself; whereas a more generous application will yield a crop not only larger, but larger in proportion to the amount of labor and capital employed. Up to this point the land is said to yield increasing returns to the labor and capital employed in its cultivation. But if the amount of these factors used in cultivating a given piece of land is still further increased, a point will eventually be reached where the product will no longer increase as fast as these factors are increased. Beyond this point the land is said to yield diminishing returns to the labor and capital employed. Though larger applications of labor and capital may continue to produce larger crops, the crops will not be so large in proportion to the labor and capital.

In growing such a specific crop as corn, for example, a single day's labor of a man and team with the appropriate tools, if spread over a whole ten-acre field, would be thrown away because it would produce no crop at all. Five days on the same field might produce something of a crop but it would be a poor one. Ten days would certainly produce more than twice as large a crop as 5, and 20 days' labor might possibly produce more than twice as much as 10. But 40 days' labor would hardly produce twice as much as 20, 80 would certainly not produce four times as much, and 200 days' labor would fall far short of producing ten times as much. If these assumptions are true of the particular field in question, it could be said to yield increasing returns up to the point where 20 days' labor were expended. Beyond that point it would be said to yield diminishing returns.

This may be further illustrated by means of Table *A*, which purports to show, in an assumed case, how much corn could be produced on a ten-acre

[8] H. C. Taylor, *Syllabus of Lectures on Agricultural Economics* (Madison: printed privately for class use, 1903), pp. 28–38.

[9] T. N. Carver, *The Distribution of Wealth* (New York: The Macmillan Co., 1904).

field by using different amounts of labor and capital, the amounts being expressed in terms of days' labor of a man and team with the appropriate tools. The ratio between the product on the one hand and the labor and capital on the other is shown in the last column, which gives the amount of product, or the number of bushels produced, per day's labor.
According to this table, as will be seen, increasing [average] returns stop, and diminishing returns begin at the point where 20 days' labor are expended in the cultivation of the field.[10]

. . . the purpose of the management of such an establishment is not to get the largest product per unit of labor, but the largest product in proportion to the total cost of operation. This purpose is not fulfilled by merely working

TABLE *A*

Days' labor of man and team with tools	Total crop in bushels	Bushels per day's labor	
1	0	0	
5	50	10	
10	150	15	*Increasing*
15	270	18	*returns.*
20	380	19	
25	450	18	
30	510	17	
35	560	16	*Diminishing*
40	600	15	*returns.*
45	630	14	
50	650	13	

the plant at that rate which will yield the largest returns in proportion to the labor, unless the cost of labor is the only item of expense in the running of the establishment.

This may be further explained by referring again to the table [*A*]. If an indefinite amount of land of the grade of that ten-acre field could be had absolutely free of cost, it would then pay the farmer to spread his labor over as much land as would enable him to put twenty days on each ten acres, since this is the proportion which, according to the table, yields him the largest product per day. Labor being the only item of expense, this ratio would also give him the largest product in proportion to the total expense of his farming. But if he had to pay a rent per acre equal to the price of 20 bushels of corn, he would then find it to his advantage to use less land, putting 30 days, instead of 20, on each 10 acres. If we may assume that rent and wages are the only items of expense, we will find that, according to the table, if he uses only 20 days on each 10 acres he will have left, after paying his rent, only 9 bushels for each day's labor, whereas if he were to use 30 days on each 10 acres, he would have left 10⅓ bushels per day. Under these conditions, this is the ratio of labor to land which would yield the largest product in proportion to the total expenses [for labor].[11]

Carver then considered the proper degree of intensity where labor is free and rent must be paid for land, and concluded that the maximum product per acre of land should be sought under this condition:

We must conclude . . . that . . . if labor were free and land expensive, the most profitable combination would be the one which would yield the

[10] Carver, *Distribution of Wealth,* pp. 56–58.
[11] Carver, *Distribution of Wealth,* pp. 71–72.

largest product per unit of land, which would require very intensive farming. Where both land and labor are expensive, the most profitable proportion must lie somewhere between these two extremes, depending upon the relative expensiveness of the two factors.[12]

But what is the most profitable proportion in which to combine the various factors of production? . . .

The general rule may be laid down that, with a given amount of land or capital, it pays best to combine that amount of labor which will just enable any unit to add as much to the total product as that unit costs. For a fuller explanation it is necessary to refer again to the table [*A*]. As the amount of labor used on this field increases beyond 20 days, there is a smaller product per day, but more than that, there is a still smaller *additional* product created by each additional increment of labor. When the labor increases from 20 to 25 days, the product increases from 380 to 450 bushels, making an additional product of 70 bushels resulting from the addition of 5 days' labor to the existing force. Each of the additional 5 days, therefore, added 14 bushels to the product, though the average product per day for the whole 25 days was 18 bushels. This additional product of 14 bushels is sometimes technically called the *marginal* product, or the product of the marginal labor, to distinguish it from the average product or the product of the average labor. Again, when the labor is increased to 30 days, the total product is increased from 450 to 510 bushels. This increase of 5 days brought an increase of 60 bushels in the crop, making an additional, or marginal, product of 12 bushels per day, though the average product for the whole 30 days is 17 bushels. When the labor is again increased from 30 to 35 days, the crop is increased by 50 bushels, making a marginal product of 10 bushels. The marginal product continues falling with each increase in the amount of labor, until finally, when the labor is increased from 45 to 50 days, the total product is increased by only 20 bushels, making a marginal product of only 4 bushels.

Now if the price of a day's labor, such as is here contemplated, were equal to the price of 11 bushels of corn, it would not pay the farmer of this land so well to hire 50 days' labor as it would to hire 45. Fifty days would cost him 55 bushels more than 45 days would cost, and would produce only 20 bushels more. The extra 5 days would net him a loss of 35 bushels. On the other hand, it would not pay him to stop with only 25 days. Thirty days would cost him only 55 bushels more, but they would produce 60 bushels more. He would therefore make a net gain of 5 bushels by hiring the extra 5 days. But it would not pay him to hire 35 days' labor, because they would only produce 50 bushels more than 30 days would produce, and he would therefore lose 5 bushels on the extra 5 days. At the assumed price of labor, 30 days would be the most profitable application of labor to this land. But if a day's labor cost only the price of 9 bushels, 35 days would pay better than 30, because they would cost only 45 bushels more, and would produce 50 bushels more. In short, it always pays best to apply to this or any other piece of land as much labor as will yield a marginal product approximately equal to its cost per unit, whatever that cost may be.[13]

Limitations of Both Theories

When Carver's book appeared late in 1904, Taylor was rewriting his lectures on agricultural economics in order to put them into book form. Taylor felt that Carver had omitted the influence of variation in efficiency of managers and permanent differences in the profitable-

[12] Carver, *Distribution of Wealth*, pp. 72–73.
[13] Carver, *Distribution of Wealth*, pp. 77–80.

ness of various enterprises carried on in diversified farming. In his book of 1905 Taylor restated the theory of intensity of culture essentially as it was stated in his syllabus of 1903, and he made a number of statements and fortifications intended to clarify his views where they differed from Carver's. With regard to the law of increasing and diminishing returns there was no difference in the views of the two men. Their point of difference related to the principle to be followed in determining the most profitable degree of intensity of culture on any given farm by any given farmer in the production of a given crop. After stating his view that the farmer should apply composite units of labor and capital to a unit of land to the point where the maximum average net product per unit is reached, Taylor said:

> If the proposition is reversed and we think of successive increments of land being brought under a given number of composite units of the other factors, the simple statement will suffice that the amount of land should be increased until the final increment of land adds just enough to the total product to pay the cost of securing the use of the land.[14] It will readily be seen that this would result in the degree of intensity of culture which will yield the largest net return per composite unit of the other factors. *On the assumption, therefore, that one farmer can manage a given number of the composite units of labor and capital-goods without regard to the area on which it is expended,* the same conclusion will be arrived at with regard to the proper degree of intensity of culture where land can be had free or where a fixed rent must be paid for its use, whether one adds successive units of the other factors to a given area of land until the average *net* return per unit reaches the maximum, or whether one adds successive acres of land to a given number of the composite units of the other factors until the final increment of land adds just enough to the total product to pay the fixed rent which must be paid to secure the use of said increment of land.[15]

But Taylor recognized that his analysis was based upon the assumption just quoted, that any given farmer "can manage a given number of composite units of labor and capital without regard to the area on which it is expended." In support of that hypothesis, Taylor said:

> If the farmer were able to operate a given number of acres of land without regard to the degree of intensity of culture, then it would be desirable to secure the largest net profit per acre; but if he can, to advantage, manage only a given number of units of labor and capital-goods regardless of the area on which it is expended, then he should seek the largest net profit per unit of these factors. . . .
>
> . . . In the production of Indian corn, for example, the amount of managerial activity required for each laborer with the team and tools which are used by him would be the same whether thirty acres of the crop were cultivated three times, or the same laborer and capital-goods were used in cultivating twenty-two and one-half acres of maize four times.[16]

Both Carver and Taylor devoted considerable space to the dis-

[14] See Carver, *Distribution of Wealth,* pp. 80–83.
[15] Taylor, *An Introduction to the Study of Agricultural Economics,* (New York: The Macmillan Company, 1905), pp. 108–09.
[16] Taylor, *An Introduction to the Study of Agricultural Economics,* p. 170.

cussion of the principle of the ratio in which land, labor, and capital should be combined and the relation in which a unit of management should be combined with composite units of the other factor.[17] No new principles and new differences of views are evidenced in these discussions. All differences arose from Taylor's closer focus upon maximum managerial profits as the goal in determining the proportions of the factors and in his recognition of the significance of difference in the profitableness of noncompeting crops and of the differences in the efficiency of farmers, which have since been so extensively illustrated in the results of cost accounting and farm surveys.

While working in the United States Department of Agriculture from July 1 to Dec. 31, 1905, Taylor had occasion to study the problem of how much water to apply to a given area of land when growing a given crop. That subject is otherwise known as "the duty of water." In April, 1907 Taylor published an article,[18] based upon work done while he was in Washington in 1905, in which that subject was discussed and in which he further illustrated the difference between his and Carver's approach to the solution of the most profitable degree of intensity of culture.

When Carver published his book on rural economics in 1911,[19] it contained the same views which he had elaborated in 1904 with respect to the proper degree of intensity of culture. As Taylor had been stimulated to further elaboration of his views by Carver's book published in 1904, there is evidence that Carver included several items relating to crop selection and the influence of share rent upon intensity of culture which bore the impress of Taylor's book of 1905. Taylor was asked to review Carver's *Principles of Rural Economics* and on the points at issue between these two pioneers Taylor said:

> It is hard for the reviewer to understand the author's position on the subject of the proportions in which the factors of production should be combined. Carver's method of applying labor and capital to land until the product attributable to the last increment is just enough to cover this additional cost of labor and capital, (pp. 221–22) which would yield maximum profits per acre, does not seem consistent with the statement (p. 175), "A large product per acre is desirable *only* when it means a large product per man, and never otherwise"; and to the question, "Shall we economize labor or land?" the reply is given, "It cannot be emphasized too much that the object of economizing labor, as stated in preceding pages, is to secure the maximum product per unit of labor and not to secure the maximum product per unit of land" (p. 188). . . .
>
> In determining the amount of labor and capital which should be applied to a given acre of land, the method of applying labor and capital to land until the product attributable to the last increment is just enough to pay the cost of the labor and capital, is misleading for the simple reason that

[17] See Carver, *Distribution of Wealth,* Chap. 2; Taylor, *An Introduction to the Study of Agricultural Economics,* 1905, Chap. 6.

[18] H. C. Taylor, "Economic Problems in Agriculture by Irrigation," *Journal of Political Economy,* 15:209–28 (April 1907). Note "The duty of water," pp. 219–25.

[19] T. N. Carver, *Principles of Rural Economics* (Boston: Ginn and Co., [1911]).

maximum profit per acre is inconsistent with maximum profit per unit of managerial activity in all cases except that of the marginal entrepreneur who is assumed to make no profit. . . .

Furthermore, the profits on the varied enterprises are different in a given year, and the profits on a given enterprise vary from year to year, due to weather conditions and to market changes. . . . In *The Distribution of Wealth* Carver did not admit differential profits, hence his theory of the proportions was logically unassailable even if of no use, but in *Rural Economics* differential profits are granted, hence the theory of the proper proportions of the factors requires modification in order to stand the test of logic.

The solution of this problem seems to lie along the line of seeking the most profitable use of the labor and capital at every turn throughout the year. Sometimes this will yield much more, sometimes less than the cost of the labor and capital, but if at all times the opportunity with the maximum net return per unit of expenditure which demands managerial activity is availed of, the total profit will reach the maximum for the year. This principle, when applied to the application of labor and capital to land, will doubtless result in applying sometimes more and sometimes less, but usually less to a given area than is called for by Professor Carver's rule of applying more and more until the product attributable to the last increment is just enough to pay the cost of the increment of labor and capital. Cost accounting gives the basis for the practical working out of the problem.[20]

One way of stating the difference in theories of Carver and Taylor on the degree of intensity of culture that will pay best is to substitute in Carver's statement "opportunity cost" per unit of labor and capital applied to land instead of the "cash cost." Opportunity cost is the return which additional units would earn when applied at the optimum degree of intensity to additional land. When the intensity is carried to the point where the value of the product attributable to the last unit equals its opportunity cost, the intensity will be the same as when the intensity is carried to the point of maximum average net return for all the units applied to a given area. This is true because the alternative is to farm more land at that optimum degree of intensity rather than take less for additional units of application on a given piece of land. The difference in the views of Carver and Taylor could not be resolved by logical processes. They had carried the analysis as far as they could until more facts were collected which would show in what measure it was labor, in what measure it was land, and in what measure it was equipment that made demands upon the manager's time and energy and thus set the limits to the amount he could manage to best advantage.

Carver himself said in 1941: "I would rather be remembered for my elaboration of the universality of the law of diminishing returns — or it is better put, the elaboration of the law of variable proportions — than for anything else."[21]

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[20] H. C. Taylor, "Review of *Principles of Rural Economics*, by T. N. Carver," in the *American Economic Review*, 2:620–24 (September 1912).

[21] Personal interview by Anne Dewees (February 1941).

George F. Warren

G. F. Warren approached the subject from the farm manager's point of view and gave attention to the principle to be followed in making a choice between crops of different demands for labor and capital per acre of land:

> Much better crop yields may be secured by the use of more labor, more fertilizers, and more expense in general. Just how far it is wise to go in this respect is always a problem. Most farmers are not growing as large crops as their conditions warrant; some are growing larger crops than it pays to grow. With our increasing population, it pays to gradually intensify methods, and as in making any change, the majority do not advance quite so rapidly as conditions warrant.[22]

As usual, Warren looked for facts that would illustrate the principles involved in applying more labor and capital to a given area of land. This led him to use the results of the application of varying amounts of chemical fertilizers in the growth of specific crops. Warren criticized the experiment station for assuming that all the extra crop due to the application of fertilizers is profit after subtracting the cost of the fertilizer. He pointed out that harvesting and handling the additional crop is likewise a cost that must be taken into consideration. Warren proceeded:

> An example of cost accounts in the use of fertilizers, Table 27, gives the results from a set of cost accounts in growing 60 acres of timothy hay on a New York farm. The increased crop, due to fertilizing, was about 60 tons. The table gives a close approximation to the cost of producing this increased crop.
>
> It will be seen that the real cost of the fertilizer on this farm is $634, not $272. In this case, a so-called profit of over 100 per cent by the usual method of figuring would really be a loss, because the fertilizer is less than half the total cost.
>
> The labor costs are charged at the average cost on this farm for the year 1911; not the cash paid the men but the real cost of labor, which includes wood, milk, use of house, etc. Horse labor is charged at cost, 13.2 cents per horse hour. A very moderate cost for a New York farm.
>
> The time required for baling and hauling hay, barn storage room, and fire insurance are directly in proportion to the crop grown. These are charged at the average cost per ton for 1911. The charge for hay storage is low. The use of fertilizers on this farm has made it necessary to build more barns. The extra time of cutting, tedding, and raking the larger crop and additional use of machinery has not been counted. The time to load and haul to the barn is estimated from the time for the total crop, but is very close to correct. The farm is three miles from the railroad and has some bad hills, but over two tons of baled hay is hauled per load. No hay loader is used, but otherwise work is economized. The charge for baling of $1.25 per ton is not counted, as this is deducted from the price when selling.
>
> In most years, the 60 tons of hay from this farm will sell for $900. This allows a profit of $265 from fertilizing, not a profit of $628 that would be indicated by usual methods of figuring.
>
> With hay at $10 per ton, there would be a loss from using fertilizers, yet

[22] G. F. Warren, *Farm Management* (New York: The Macmillan Company, 1913), pp. 157–58.

by the experiment station method of figuring the profit would be over 100 per cent.

It will be seen that the fertilizer is much less than half the total cost. The costs may be summarized as follows:

Fixed costs, fertilizer, freight on fertilizer, mixing and applying fertilizer, interest on these — $365.25.

Costs directly proportional to crop, hauling in, storage, fire insurance, baling, hauling to market, interest on these — $269.41, or $4.49 per ton.

We can then determine approximately what increases and prices are necessary for profit on this farm. With an increase of half a ton per acre from

TABLE 27

REAL COST OF THE INCREASED CROP DUE TO FERTILIZING 60 ACRES OF TIMOTHY

Cost of Fertilizer		
8,000 pounds nitrate of soda	$185.00	
2,080 pounds muriate of potash	39.77	
10,354 pounds of acid phosphate	47.37	— 272.14
Other Costs		
Freight on fertilizer	26.66	
39½ man hours hauling fertilizer at 21.6 cents	8.53	
58 horse hours hauling fertilizer at 13.2 cents	7.66	
29 man hours mixing fertilizer	6.26	
84½ man hours sowing fertilizer	18.25	
101½ horse hours sowing fertilizer	13.40	
200 man hours hauling in and storing 60 tons hay	43.20	
160 horse hours hauling in 60 tons hay	21.12	
108 man hours pitching hay to baler	23.33	
Meals for hay pressers	14.40	
Meals for hay pressers' horses	7.30	
118 man hours hauling 60 tons to railroad	25.49	
208 horse hours hauling 60 tons to railroad	27.46	
Use of barn (proportionate share)	95.00	
Fire insurance (proportionate share)	3.00	
Interest on above costs for 7 months 6%	21.46	— 362.52
		$634.66

the treatment, the fixed costs are $365 and the variable costs $135. The 30 tons of hay would have to bring about $16.66 per ton to pay the cost. This would not be a very attractive investment with hay at less than $18 to $20.

In some extra good years, this treatment on this farm may give an increase of one and one-half tons per acre. The fixed costs would then be $365 and the variable cost $404. The cost of the 90 tons of hay would be $8.55 per ton.

We find that the increased crop costs approximately $16.83 per ton if the increase is one-half ton, $10.58 per ton if the increase is one ton, and $8.55 if the increase is one and one-half tons. Farmers in New York often grow hay by ordinary methods at a cost of $6 per ton. These results may suggest the reason why farmers are so slow to take up the fertilizing of hay. If one can grow more acres by ordinary methods, he may do as well or better than by spending his limited capital for fertilizer. If he cannot buy or rent more land or if he has plenty of money, he may use fertilizers. When land becomes worth more it will pay to be more saving of it.[23]

[23] Warren, *Farm Management,* pp. 163–66.

A comparison of the quotations shows that Warren and Taylor were essentially in agreement on the principles to be followed in making a choice of crops and in deciding upon the proper degree of intensity of culture in the production of a given crop. They both recognized, also, that there could be no complete segregation of the problem of crop selection and the problem of intensity of culture because one of the ways of farming more intensively is to change to more intensive crops and more intensive livestock enterprises.

In 1917 prices of farm products had risen. Wages of farm labor had gone up. Cows cost more, but not proportionally more than the rise in the price of dairy products. Land rents and land values had not changed. The question to be answered was: Should the farmer apply more labor and capital per acre of land under these circumstances? Taylor said no,[24] because the other elements of cost had increased relative to the price of land, and if additional land could be gotten it would pay to farm more land in order to increase the production rather than farm more intensively. Taylor pointed out that increased intensity of culture might be attained either by applying more labor or more capital to a given area of a given crop or by changing to a crop which regularly required a greater application of labor and capital per acre.

Benjamin H. Hibbard

B. H. Hibbard touched upon the subject of intensity of culture:

> It has many times been asserted that high prices will result in a more intensive cultivation of the soil. Intensive cultivation of the soil means a more complete or painstaking use of the soil in terms of the labor and capital applied to it. As a general principle it is safe to say that the scarce factor will be used the most fully as compared to the less difficult factors to obtain. . . .
>
> . . . a farmer capable of thinking, will revolve in his mind the relative advantage of working a given number of acres with great care or a larger number of acres with something like ordinary care, and since he will pay the rent with fewer bushels, or tons, at the present time as compared with former years, is likely to decide that there is more pay in a large acreage than in added work on a given area. . . .
>
> The farm operator, whether tenant or owner, who can see his way clear to get the crop of ordinary size out of an added piece of land by doing the work in the customary routine manner, will be much more likely to find the opportunity of expanding by this means than by trying some new means of making the former area produce more per acre. It takes more imagination, more faith, and usually more capital to do anything of a signal nature in the way of intensive cultivation than in the way of extensive cultivation. The terms intensive and extensive are strictly relative. What would have been called intensive a half century ago is viewed as extensive now. . . .
>
> . . . where added acres are not available there will be a very strong tendency to turn the acres already in the farm to the highest use. There will be fewer acres left doing slack duty in pasture and meadow. More labor will be needed to make them produce cultivated crops, and it may not be

[24] H. C. Taylor, "High Prices and Intensive Farming," American Farm Management Association, *Proceedings*, 1917 (The Association, 1918), pp. 105–12.

forthcoming, but where by using more machinery or another horse or by making a greater effort in any feasible manner it can be done, the change is sure to be made. Thus we have the seeming paradox of both intensive and extensive tendencies. . . .

The total acreage of the country which is being farmed has expanded a little during the past few years. The amount of labor available for farms is somewhat less than usual, from which it follows that a general move toward more intensive culture is out of the question.[25]

Tolley, Black, and Ezekiel

In the years 1921–25 the Chief of the Bureau of Agricultural Economics of the United States Department of Agriculture was urging members of the staff to press forward the research on intensity of culture. He asked W. J. Spillman to give thought to the subject and H. R. Tolley to see what could be drawn from the cost accounting work of the Bureau that would throw light upon the subject. The results of the efforts of Tolley, assisted by M. J. B. Ezekiel, and the advice and counsel of J. D. Black, was published in 1924.[26] That study focused definitely on the farmer's profits, shows that additional increments of one element may soon call for increase of certain other elements if additional benefits are to result. The presentation is highly statistical and should be studied carefully and fully by any student desiring to contribute further to the subject. Only a few main points can be presented here. The subject is discussed in terms of "input as related to output." The law of diminishing returns is stated, "as input increases, the input per unit of output increases."[27] The corollary is:

> . . . there can be no one definite requirement for each unit of product, but instead a different requirement per unit of product as the input changes.[28] As the requirements per unit of output change, so do the costs change, for costs are merely inputs expressed as values.[29]

In that bulletin illustrations are given showing variation in fertilizer input per acre for potatoes, feed input for beef cattle, labor input per acre for wheat, etc. This is followed by facts showing vari-

[25] B. H. Hibbard, *Effects of the Great War Upon Agriculture in the United States and Great Britain* (New York: Oxford University Press, American Branch, 1919), pp. 158, 159.

[26] H. R. Tolley, J. D. Black, and M. J. B. Ezekiel, "Input as Related to Output in Farm Organization and Cost-of-Production Studies," U. S. D. A., *Department Bulletin* 1277 (Washington, 1924).

[27] Tolley, Black and Ezekiel, U.S.D.A., *Department Bulletin* 1277, p. 4.

[28] No constant terminology has been used in presenting "input requirements" in cost-of-production bulletins. The nomenclature varies from "basic cost formula" and "basic acre requirements" to "quantitative requirements for crop production." "Unit requirements" is a clear-cut expression of what all of these phrases mean, namely, certain definite physical quantities of each input factor required to produce a specified unit of output. The whole thesis of this bulletin is that there is actually no such thing as a definite unit requirement for a specified production. It will appear from what follows that there is a range, frequently a wide one, in the amounts of the cost elements which enter into a given product. It is necessary to have some term which expresses the relation of input to output under any specific set of conditions, but which does not imply that this is a fixed relation applying to all conditions. The single term "input" will ordinarily be used, although it does not sufficiently suggest that there is a definite relation between input and output. If occasionally the expression "input requirements" is used, the reader will understand that "requirements" is added merely to suggest this definite relationship.

[29] Tolley, Black and Ezekiel, U.S.D.A., *Department Bulletin* 1277, p. 4.

ation of "output per unit of input." That leads to a discussion of the least-cost combination of inputs. Illustrations were given to show the amounts and the combinations of corn and hay which would produce gain in beef cattle at the lowest cost under varying conditions. Instructions for proceeding were as follows:

Assume various probable or possible combinations of factors, and determine the least-cost combination under each. In presenting the results, state definitely upon what assumptions each computation of costs under various combinations is based and present sufficient data to make it possible to calculate the least-cost combinations under other assumptions.

. . . Most farms present a combination of products. Hence several least-cost combinations must be calculated for most farms. The principal difficulty which this presents is that the cost rates for man labor and horse labor vary with the different enterprises, according to whether they conflict or supplement each other, and according to the time of the year. Merely changing the proportions of enterprises may affect the cost rates. Cost rates for land are similarly affected. Least-cost determinations made on the basis of flat rates for labor and land will frequently be seriously misleading.

. . . the least-cost combination is not necessarily the combination which will yield the largest profit. Total profit is the product of the profit per unit of output multiplied by the number of units produced; the number of units produced at a higher-cost combination may be enough larger than at the least-cost combination to more than offset the lower profit per unit. . . .

The conclusion that as long as the number of productive units — cows, acres, hogs, etc. — is not changed, the greatest profit can not be obtained at a combination less intensive (that is, producing fewer units of output per cow or acre, etc.) than the least-cost combination, is of particular value with regard to the practical use to be made of the analysis. Farmers operating with combinations lower in intensity of production than the least-cost combination are frequently receiving much reduced returns because they produce only a small number of units at a low profit per unit. They can not fail to gain by increasing the intensity of their production to at least the point of least cost if they can do so without decreasing the size of the enterprise as measured by number of cows or other productive units. How far it will pay to increase intensity beyond the point of least cost will depend upon how much increased volume of production offsets decreased profits per unit. . . .

In general, so long as there is no change in the size of an enterprise, as measured in physical terms — cows or acres — the most profitable combination can not be less intensive than the least-cost combination. But when there is change in the magnitude of the enterprise, this no longer holds true. Then the total profit from the enterprise must be considered, and the further complication of the effect on the entire combination of enterprises must be taken into account. . . .

. . . The analysis thus far assumes one product only. How shall the highest total return with management applied to several different enterprises, each with its own set of prices, be determined? . . .

Even if the enterprises on a farm were all supplementary — that is, not conflicting as to use of labor and management — so that one could assume that the farmer at any one time was devoting all of his managerial energy to only one of the several products, the problem would still be difficult, for the input combination that meant most profit from one product would not be the same as for the other products. Extra labor could be hired for those products returning greatest profit at the largest input of labor, but of course

at higher rates. For horse labor the same amount must ordinarily be used for all. This problem is therefore inextricably involved with . . . the choice or combination of enterprises.

It will be remembered, however, that the net gains from the various inputs include whatever effect differences in quantity or quality of management which are correlated with input may have upon output per unit of input.[30]

A careful study of that bulletin shows that the problems of intensity of culture, intensity of fertilizing, and intensity of feeding are even more complicated than Carver and Taylor had indicated in their preliminary analyses.

In 1924 the Bureau of Agricultural Economics issued a booklet in which a chapter was devoted to details of management as they relate to intensity of culture. The final paragraph of that chapter reads as follows:

The problem of how to conduct each line of production so as to make it pay the most is one that is up for decision from day to day and season to season. Decisions reached at one time may have to be changed shortly afterwards because of changes in prices or changes in weather. A farmer must constantly have in mind doing the thing which adds most to the profits of the farm as a whole. One year this may mean giving the corn a fourth or fifth cultivation. Another year it may mean putting more time on the hay harvest in order to get the hay up in good condition, even if the corn is only cultivated three times. For the hog producer it may mean selling his hogs at 200 pounds at one time and 250 pounds after prices have changed. None of these questions can be settled satisfactorily by custom, as the right answer changes as conditions change.[31]

William J. Spillman

In a book published in 1924 W. J. Spillman analyzed the question of intensity of culture and also included a translation of some of Emil Lang's literature on the subject.[32]

Both Spillman and Lang treated the subject primarily from the physiological and biological point of view and in large measure in mathematical terms.[33] Their work on the way in which animal and plant life respond to succeeding increments of feed, fertilizer, and other efforts to improve conditions of growth is of great value to the economist who would think clearly of the economic aspects of the subject. In Part I of that book, Spillman emphasized the view that:

The increments in yield corresponding to successive equal increments in fertilizer applied to a crop tend to constitute the terms of a decreasing geometric series; thus if R represent the ratio of the second increment to the first, then the ratio of the third increment to the second, of the fourth to the third, and so on, is also R. . . .

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[30] Tolley, Black and Ezekiel, U.S.D.A., *Department Bulletin* 1277, pp. 31–35.

[31] H. C. Taylor, H. R. Tolley, and J. W. Tapp, "Practical Farm Economics," U. S. D. A., *Miscellaneous Circular* 32 (Washington, 1924), p. 36.

[32] W. J. Spillman and E. Lang, *The Law of Diminishing Returns* (Yonkers-on-Hudson: World Book Company, 1924). Part I, "The Law of the Diminishing Increment," by W. J. Spillman, and Part II, "The Law of the Soil," by E. Lang, translated by W. J. Spillman.

[33] For a later contribution to this subject, see W. J. Spillman, "Use of the Exponential Yield Curve in Fertilizer Experiments," U. S. D. A., *Technical Bulletin* 348 (Washington, 1933).

. . . it is shown that this law is confirmed by field experiments with fertilizers and with irrigation water in this country; also that it applies to the growth of fattening animals, and to the growth of children. I also show the derivation of the law of diminishing returns (profits) on basic capital from the law of the diminishing increment, and the derivation of the law of diminishing returns on working capital from the two preceding laws. . . .[34]

In Part II the translation from Emil Lang reviews the work of Justus von Liebig, Adolph Mayer, Paul Wagner, E. A. Mitscherlich, and others, which shows that much work had been done in Germany on the physiological aspects of the subject of diminishing returns in the application of a given element of plant food to a given plant. One point seems to be clear, namely, that when just one of the many conditions of plant growth is improved by succeeding increments, the point of diminishing returns is reached much more quickly than when several of the conditions are improved simultaneously.

Ezekiel, McNall, and Morrison

A bulletin on milk production in southeastern Wisconsin treated of the proportions of all the elements entering into the cost of milk production:

. . . These results indicate that the law of diminishing returns is applicable to the cows of the area. The herds with the larger production received more feed than did the herds with lower production, but not proportionately more, so that the more economical production was obtained from the higher producing herds. There were marked diminishing returns, however, for the herds producing more than 7,000 pounds of milk. . . .

. . . They also indicate the direction in which the composition of the ration or the total quantity fed should be varied as the values of the different feed stuffs or the price of milk or other products change, if maximum returns are to be secured. . . .[35]

Thus while considerable attention was given to the problem of determining the proper degree of intensity of culture for a given crop at a given time and place, the methods of applying the principles to the practice were not adequately developed. When the decisions were made by individual farmers without government influence the farmer felt his way and learned approximately how many acres of a given crop he could handle to best advantage with his labor force and equipment. But, with the government telling him to cultivate fewer acres without limiting the number of bushels or pounds he might produce, the farmer was given a different problem. That problem was, how shall I use my labor and equipment to best advantage on the limited area?

[34] Spillman and Lang, *The Law of Diminishing Returns*, p. iii.

[35] M. J. B. Ezekiel, P. E. McNall, and F. B. Morrison, "Practices Responsible for Variations in Physical Requirements and Economic Costs of Milk Production on Wisconsin Dairy Farms," Wisconsin Agr. Exp. Sta. *Research Bulletin* 79 (Madison, 1927), p. 53.

The search for the answer usually led to the more intensive use of the limited area. The farmer sought better seed; he prepared his land more carefully; he used more fertilizer; he gave more attention to securing an optimum stand; and if a tillage crop, he cultivated more often and with greater care. By these means he secured larger yields per acre but probably not larger yields per man than if he had used equally good seed and spread his labor over a larger area.

With government participation in farm management the principles of economy in production should be given renewed attention.

9.

Size of Farms

THE PROPER SIZE OF FARMS is a subject which has been discussed time out of mind. In the early years of the twentieth century American agricultural economists commenced writing on this subject. Census figures had shown a wide range in the size of farms and had carried facts which indicated that the type of farming often caused these differences. From the standpoint of economic analysis, the size of farms is one phase of the question of the proportions of the factors, with the farmer as the fixed factor, to which composite units of land, labor, and equipment may be added in amounts to suit the farmer.

Henry C. Taylor

The academic discussion of the economics of size of farms was opened by H. C. Taylor at Wisconsin in the winter of 1902–03. A summary of the discussion at that time is presented in his syllabus of lectures.[1] A more extended discussion by the same author appeared in 1905:

> The amount of land which a farmer should attempt to operate, in order that he may win the largest total net profit, depends upon many varying conditions: the kinds of crops which he grows; the intensity of culture; the character of the horses, the tools, and the machines which he uses; the number and character of the laborers which he employs; and the efficiency of the farmer himself, are all important factors in determining the size of the farm which is most economical.
>
> Where tobacco or sugar beets are cultivated, one man cannot operate so large a farm as where maize is the principal crop. . . .
>
> Since intensive culture requires more labor upon a given area of land, it is impossible for one man to cultivate so many acres where the culture is intensive as where it is extensive. . . .
>
> A farmer can use more land when he has the most efficient forms of capital-goods with which to work. . . .
>
> The efficiency of the farmer is an important factor in determining how much land he can use to best advantage. The energetic man, whose clear head and strong arms enable him to plan his work most economically and

[1] H. C. Taylor, *Syllabus of Lectures on Agricultural Economics* (Madison: printed privately for class use, 1903).

to do it quickly, can operate a much larger farm than his neighbor who may be characterized by the opposite qualities. This may happen as a result of variations in the quantitative efficiency [the word "capacity" is used in later writings of the same author] even where the farmers perform most of the work themselves; but the farmer who is . . . very efficient as a manager of agricultural operations, can increase his total net profits by operating a large farm by means of hired laborers who may have little managing ability themselves, but who have ordinary capacity for the performance of farm labor when directed by an efficient farmer. The kinds of crops, the intensity of culture, the efficiency of the capital-goods and of the farmer himself remaining the same, the greater the number of laborers, of a given degree of efficiency, who are employed by one farmer the larger the farm may be to advantage. A question may arise as to how far this increase in the number of laborers, and the accompanying increase in the size of farms, should be carried in order that the farmer shall win the largest net return for his efforts, and also as to the desirability of large farms socially considered.

If a farmer possesses superior managing ability, so that it is profitable for him to devote all of his time and energy to the management of a farm, employing laborers to perform all of the detailed operations, how large a farm should he attempt to operate? The farmer should look, of course, to the net profit which is left after the payment for the use of the land and capital-goods, and the payment of the wages of hired laborers have been made.

Having decided upon the branch of agriculture which he is to follow, the grade of land, capital-goods, and laborers which he is to employ, the kind of crops which should be grown, and the proportions in which these factors should be brought together and the amount of managerial activity which should be devoted to each unit, the farmer has yet to determine how many of these composite units he should attempt to manage.

If the farmer could increase the number of these composite units indefinitely without any increase in the work of management, and, at the same time, without any reduction in the quality of the management, and hence, without any reduction in the average net return per composite unit, there would be no limit to the size of the farm nor to the total net profit which he could win. . . .

THE PRINCIPLE TO FOLLOW

The principle which should be followed in attempting to determine the number of composite units made up of the proper proportions of land, labor, and capital-goods, which should be brought under a given amount of managing activity, [was stated as follows]: . . .[2]

Assuming that a farmer wishes to devote a given amount of effort to the management of agricultural operations, the question arises whether he should give this effort to a large number of these composite units and give but little attention to each unit, or devote this same amount of managerial activity to a small number, and give very close attention to each unit. If the number of these composite units under one management be increased, without any increase in the amount of effort put forth on the part of the manager, so that less and less attention is given to each unit, a gradual decrease in the return per unit will take place as the number of units is increased, until finally a point will be reached where all of the net profit secured by adding another unit will be absorbed by the subtractions from the returns to the units already employed. . . .[3]

The management of a farm is something which must be diffused through

[2] H. C. Taylor, *An Introduction to the Study of Agricultural Economics,* (New York: The Macmillan Company, 1905), pp. 117–21.

[3] Taylor, *An Introduction to the Study of Agricultural Economics,* pp. 89–90.

the details of the work. There is a withdrawal of the efficient manager's ability from the details and a concentration of it upon the general supervision of the farm as the size of the farm increases. As more and more of the details are delegated to hired men these details are not looked after so well as they might be if looked after directly by the master. . . .[4]

Having decided upon the number of the composite units of the factors which should be brought under a given amount of managerial activity, that is the intensity of the management, other things remaining the same, the size of the farm should vary directly as the amount of effort which the farmer is willing to put forth in its management. The farmer's energy is, of course, limited, and after he has performed a given amount of work per day, it requires more and more inducement to impel him to increase his activity. It may be that a few hours of work each day would be a pleasure to him, and that the profits which he received from these few hours' labor would be much more than enough to induce him to perform the work of management; but when hour after hour is added to the time which he must spend in the fields, and the rapidity of his movements from place to place must be increased more and more, in order that the farm may be properly operated, each succeeding addition to the time and the speed of his work becomes more and more wearisome, while at the same time the wants which are to be satisfied by the fruits of this increased labor become less and less important to him, until finally the point is reached where the increase in the net profit is not sufficient to induce the farmer to increase his activity. . . .

Which is the most desirable from the social point of view, the large, the medium, or the small farms? Having in mind that farmers vary greatly in their degrees of efficiency, it would seem socially desirable to have the managing done by the most efficient farmers; for in this way the labor would be under more efficient direction, than where every man directs his own activities. Another advantage of large farms lies in the fact that they facilitate a more extended division of labor. There can be a shepherd who devotes all of his time to the sheep, and for this reason he can better understand his business. So it is in every line of work on the large farm. Machinery can be used to better advantage on the large farm. The efficient manager of the large farm can better determine what will pay and what will not pay, so that he is in a much better position to direct the labor power of society to the best advantage. The man who is toiling in the field as well as managing the farm is less likely to be far-sighted at a time when he is tired, and at such times he may sacrifice much of the profits for a relatively small saving of labor.

On the other hand what improves the efficiency of the management in this way may lower the quality of the workmanship. There are some men, it is true, who seem to work better for others than for themselves, but with many others, the opposite is true. There are vast numbers of small farmers who do not use good methods, who, because of their interest in that which is their own, will put forth greater effort than they would if they were working for some one else.

It has been said that certain kinds of farming lend themselves more readily than others to large scale operations; that wheat farming, for example, is especially suited to large scale operations, but that as this one crop system gives way to diversified farming, the advantages of smaller farms assert themselves. The owner of young stock takes more pains with them than he would if he were a hired laborer. It is certainly true as a general rule that the man who owns the lambs or pigs will lose more sleep and go to more trouble than will a hired man. . . .

[4] Taylor, *An Introduction to the Study of Agricultural Economics*, p. 125.

The question of the most desirable size of farms, when viewed from the standpoint of the most economic use of the productive energies of a country, is a matter of determining the point at which the advantages of the more efficient general supervision as to crops, field-systems, intensity of culture, etc., is balanced by losses in the execution of the details of the work with less skill and personal interest.

The conclusion is, therefore, that every man who can make more by hiring to a farmer should do so, and every farmer who can increase his net profits by hiring men and increasing the size of his farm, without increasing the amount of effort which he need put forth, should do so. Each man would then get the largest net income, and the value of the agricultural productions of the country would reach the maximum.

But the actions of men are not controlled entirely by economic motives. There is a pleasure to be derived from being one's own master, which is often prized more highly than many of the things which money can buy. . . .[5]

Thomas F. Hunt

In a manner somewhat similar to the above discussion, T. F. Hunt, in 1906, discussed the size of farms as it relates to type of farming and decreasing efficiency when a given amount of managerial energy is applied to larger and larger farms.[6] Hunt emphasized that "The size of the farm . . . should be large enough so that the gross income will afford possibility of a competence."[7] Hunt continued:

Generally speaking, the higher the price of the land, the smaller the farm. An acre of high-priced land usually brings in a larger income than an acre of low-priced land. Consequently, less high-priced land relatively is required for a livelihood. While the tenant system may not decrease the amount of land owned by a single individual, and may perhaps further tend to increase it, the system does tend to decrease the size of farms under single management. The man's ability or taste may influence the size of the farm.

Some advantages of small farms are:

1. The proprietor can give his personal attention to a greater number of details of the work, and thus have the work more efficiently done.
2. The laborer usually takes a greater interest in the work, and is therefore more efficient.
3. The proprietor himself can devote a larger part of his time to direct labor; while, on a larger farm, his time is devoted to superintendence.

Some advantages of large farms are:

1. But little more capital is required for large than for small farms. Thus the buildings and machinery required for a farm of 160 acres is very little more than that required for an 80-acre farm.
2. Larger fields, which are made possible by a larger farm, make less turnings, less weeds and less insect enemies. In fruit-raising, especially, hedge-rows and fences are a very important factor in harboring insect enemies.
3. Machinery and methods may be employed which would not be economical on a small farm, such as engines, feed cutters, fanning mills, scales and other appliances, by which products may be made more attractive for sale or more valuable for use and by which more accurate records of what is being accomplished may be kept.

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[5] Taylor, *An Introduction to the Study of Agricultural Economics*, pp. 121–26.

[6] T. F. Hunt, *How To Choose a Farm* (New York: The Macmillan Company, 1906), pp. 17–18.

[7] Hunt, *How To Choose a Farm*, p. 13.

4. Large farms attract to them larger capital and riper experience, and often, though not in all cases, result in the highest and best methods.

There are many instances in which the better methods have been employed on the smaller farm, but this is usually on account of the personality of the man, and his ability to give larger personal attention to the work. Men who conduct large farms are likely to be the breeders and improvers of plants and domestic animals. . . .[8]

George F. Warren

While Taylor and Hunt undertook to state general principles determining the size of farms, G. F. Warren marshalled farm survey data on the subject.[9] Under the heading of "Size of farm and profits," Warren said:

Records of a year's business on 586 farms operated by owners were secured in Tompkins County, New York. This is a region of general farming. The products sold are milk, butter, hay, potatoes, eggs, buckwheat, wheat, apples, and many other items. Hay, oats, and corn are raised for feed.

In this region, the farmers with 31 to 60 acres of land made less than hired-man's wages. (As shown in Cornell *Bulletin* 295, pp. 414–23.) They made interest on their money and an average labor income of $254. They could have lent their money and hired out for about $30 per month, or better yet, could have been tenants on larger farms. . . .

Farmers who had from 61 to 100 acres made about the same as hired-men. The farmers on farms of over 200 acres, averaging 261 acres, made interest on their money and about $80 per month for their time. Not only are the averages poor, but the chances of an individual are also poor on small farms. Of 352 farmers on farms of less than 101 acres, only 9 made labor incomes as high as $1,000, but nearly one-third of those on the 200-acre farms made over $1,000.

The farms of over 200 acres are not bonanza farms, they are none too large for family-farms. They provide work for two to three persons. On the average, they had about one hired-man per farm.

Similar records were secured for 578 farms in the northern part of Livingston County, New York. This is a region with rich soils and very prosperous conditions. The farmers with less than 51 acres made less than hired-man's wages. Those with over 200 acres, averaging 305 acres, made an average labor income of $1,082, or $90 per month. . . .

Not only are the average labor incomes much larger on the larger farms, but the chances of making a good profit are much better. No size of farm is large enough to insure a profit. Some persons on large farms have failed to make good labor incomes, but the proportion of such failures is smaller and the proportion of successes is much greater on the larger farms. All of the very highest labor incomes are made on large farms. Of the 52 farmers who had 50 acres or less, only 3 (or 6 per cent) made labor incomes of over $1,000. The highest was $1,159. But of 201 farmers with over 150 acres, 89 (or 45 per cent) made over $1,000. Of the 199 farmers who farmed 100 acres or less, only two made labor incomes as high as $1,500. The highest was $1,747. But of the 201 farmers who worked over 150 acres, 46 made over $1,500. The highest was $7,250. . . .

[8] Hunt, *How To Choose a Farm*, pp. 24–25.

[9] G. F. Warren, *Farm Management* (New York: The Macmillan Company, 1913), Chap. 7; G. F. Warren and K. C. Livermore, "An Agricultural Survey, Townships of Ithaca, Dryden, Danby and Lansing, Tompkins County, New York," Cornell Agr. Exp. Sta. *Bulletin* 295 (Ithaca, 1911).

There are plenty of good men among the 199 who are on farms of less than 100 acres. The reason for their chances of profit being less than on the larger places must be due to physical facts.[10]

We believe that Warren underestimated the significance of variation in the capacities of men. In ten decennial census reports the statistics have shown a wide range in the size of farms. Undoubtedly at any given time some men are on small farms who should be on larger farms, and some men are on farms larger than they can manage to best advantage, but the tendency is for the size of the farm to correspond to the size of the farmer. If all farmers had practically the same ability as farmers, there certainly would have been a strong drift toward a most profitable size that would show in the statistics through a 90-year period. Of course, with changes in methods, the "most profitable size" would change. On this subject of the relation of the ability of the man to the size of the farm, Warren said:

Some persons believe that there are 40-acre farmers, 80-acre farmers, and 300-acre farmers, and that all these men have so shifted around that the larger farms are always in the hands of the better men. The better results are, therefore, all attributed to the man.

A study of the history of a large number of individual farms and farmers shows that the man is only one of the many factors that have to do with success. The soil and the area of crops grown are more frequent causes of success and failure.

To make even a moderate success on a small farm is very much more difficult than it is to make a good success on a fair-sized farm. When the necessary equipment and horses for an 80-acre farm will be almost sufficient for 160 acres, and when a family can do all the work on the larger farm, it will be seen at once that the larger farm will double the income without much more expense. It therefore becomes a task for a genius on the 80-acre farm to compete with a very ordinary mortal on the larger area.

It takes much less intelligence to make a profit out of a mowing machine that cuts 50 acres than it does out of one that cuts 10 acres a year. It takes less ability to make a profit out of four horses that raise 100 acres of crops than it does to make a profit out of half as many horses that farm only 40 acres. It takes much less intelligence to direct a hired man so as to make a profit from employing him, if he drives 3 or 4 horses, than it does if he drives two horses.

The confusion has arisen from the almost universal tendency to deal with extremes, and to think of the small farm as a one-man farm and the large farm as a farm where the operator directs many men. It certainly takes ability to handle a large number of men on a large farm, but the problem between a 100- and a 200-acre farm is not in number of men employed, but in having only half work for them on the smaller place.

The large farms operated by tenants show the same degree of efficiency as those operated by owners. (See Cornell *Bulletin* 295, p. 542.) Frequently, after the tenant saves enough money, he becomes an owner of a small place. The efficiency in the use of his horses and machinery is then limited.

A study of the shifts of individuals is exceedingly interesting and instructive. A farmer frequently rents or buys more land and farms it without any more help, horses, or machinery.

The logic of the question ought to be sufficient without any of the pre-

[10] Warren, *Farm Management*, pp. 243–45.

ceding discussion. If small farms are more efficient than larger farms, then all the more able men would choose small farms, and if they had money left over, invest it in other ways.[11]

Most agricultural economic writers have recognized the fact that farmers vary greatly in their ability. However, few of them have given adequate consideration to the *significance* of the fact of wide variation in the efficiency and the capacity of farmers. The wide ranges in labor income, which are shown in every area survey and on every cost accounting route, have been explained faithfully in terms of size of business, yield per acre, yield per cow, gain of meat animals per unit of feed consumed, and the amount of work performed per man and per horse, but too generally the subject is dropped at that point without studying the relation of the qualities of farmers to these results. The failure to grasp the significance of variations in the capacity and efficiency of farmers has often led to the wrong conclusion.

Warren pointed out several advantages in the larger farm which are valid reasons for taking it if the farmer has the ability to manage that size farm successfully. For example:

> There are many farm operations that require two men, so that no matter how small the farm may be, one man cannot do all the work to good advantage. Even with the smallest farms, some help is hired. . . .
>
> Economy in the use of horse labor is becoming increasingly important. In most parts of the country, it costs as much, or more, to keep a team of horses as it does to keep a man. The chief economy to be effected in the use of horses is to keep them employed. It is difficult to keep horses busy if the farm is too small.
>
> . . . Three or four horses are the smallest number that can be used efficiently with modern machinery. The farms of 151 to 200 acres are the smallest ones that have an average of four horses per farm. . . .
>
> The figures of acres per horse are still more striking. The small farms have not enough horses to make efficient teams, and yet they are over-supplied with horses compared with their area. . . .
>
> On a one-man farm, the horses are kept out of the fields whenever the farmer does chores, hand work, or goes to town. On a two-man farm, one man may be using all the horses while the other man does other work. If there are four or five horses on the place, the man who is working the teams may be driving three or four horses. At the same time, the other man may make a trip to town with one horse. All the horses are then kept at work. A farm with five horses has a great advantage in being able to adjust the size of team to machinery and work. It allows a five-horse team, a four-horse team, or two two-horse teams, with a single horse for other work, and allows a three- and a two-horse team. By these means, the labor of men and machinery is economized, and work can be more promptly done. . . .[12]

On the economical use of machinery Warren said:

> Most of the common farm machinery can be used to do the work on a 200- or 300-acre farm, as well as on a small farm. If the small farm buys the

[11] Warren, *Farm Management*, pp. 263–64.
[12] Warren, *Farm Management*, pp. 252, 255–57.

machinery, it is at too great a cost per acre. If it goes without machinery, the loss of time and yields is even more serious.

. . . The annual cost for housing, repairs, and depreciation, interest, oil, insurance, has been found by cost accounts to be about 20 per cent of the value of the machinery. The annual cost per acre for use of machinery would be about $1.75 on the smallest farms and $1 on the largest farms. . . .

Apparently, the efficiency with which the labor of men, teams and tools can be used is the important factor in making the larger farms pay better. . . .[13]

Warren discussed also the advantage of larger fields on the larger farms and the advantage of buying and selling when larger quantities were involved. These were valid arguments for larger farms for larger men. Furthermore, Warren's emphasis on the importance of size of the business was timely because it came with changes in farming methods and equipment which made it necessary for a given farmer to enlarge his operations if he would make the most profitable use of new methods and equipments.

Tempered with a realization on the part of extension workers of the significance of the size of the man, Warren's gospel of larger farms was useful. It stimulated thought on the subject. But, as L. H. Bailey has so often emphasized, the economic motive is only one of the motives which guide the actions of men.[14] Bailey's treatment of this subject offers the suggestion that differences in motives, as well as differences in ability to work and manage, have much to do with the size of farms.

Thomas Nixon Carver

T. N. Carver's contribution to the subject of size of farms is found in the following general statement:

It is not possible to say in advance how large any man's farm ought to be. One can say, however, in general terms, that it ought to be large enough to occupy the reasonable working time of the farmer and his family when they use the best and most efficient tools and machinery known to the farming world, with ample horse power, or some other form of power, to drive that machinery. According to this rule it would be safe to say that in the growing of such field crops as corn, wheat, oats, and hay, a farm of much less than 160 acres would prove too small for the most economical use of labor — that is, too small to give the maximum product per man. . . .[15]

Under the heading, "Large-, medium-, or small-scale farming," Carver defined each of these concepts. He went on to say:

The undoubted tendency in this country is toward the medium scale of production and away from both extremes. . . . A few bonanza farms there have been, but they have generally proved less efficient than those of medium size, and the tendency has been for these immense agricultural establishments to break up. There are, to be sure, certain advantages and economies in large-scale production, even in agriculture, but there are also very marked

[13] Warren, *Farm Management*, pp. 257–59.
[14] L. H. Bailey, *The Harvest* (New York: The Macmillan Company, 1927), pp. 196–209.
[15] T. N. Carver, *Principles of Rural Economics* (Boston: Ginn and Company, [1911]), pp. 169–70.

difficulties and disadvantages, and the general experience tends to show that the disadvantages are greater than the advantages.

ADVANTAGES AND DISADVANTAGES

The advantages of large-scale production in agriculture are the same as in any other industry. They are, first, economies of skill; second, economies of equipment; and third, economies in buying and selling. . . .

The disadvantages or difficulties of large-scale farming may be grouped into three classes, namely, geometrical, seasonal, and temperamental. The geometrical difficulties are due to the fact that farming necessarily requires considerable space or superficial area. . . .

This possibility is still further limited by the seasonal difficulties. . . . It is a very different matter to direct a large body of men who are to do the same kind of work the year round, from what it would be to direct a body of men whose work must change frequently, as it must of necessity change on a farm from month to month, from day to day, and even from hour to hour. Such a change necessitates not only supervision but an entire organization of working force of the farm, assigning to each and every man a new task. Even the work of supervision becomes much more complicated and difficult by reason of the fact that no mere automatic checking device can be utilized to keep a record of the workman's time or the amount and character of his work. Not only are there normal, seasonal changes of work, but farm management has to contend with abnormal or unforeseeable changes like storms, floods, fires, insect pests, etc. As a result of a sudden shower in harvest time the plans of the day may be upset at an hour's notice, and the whole working force of the farm may have to be reorganized and set at a new task for which there are no precedents or experiences to guide. To direct a score of men under these conditions requires a degree of intelligence, resourcefulness, and executive ability of a very high order. To direct a hundred would require the ability of a military commander, a merchant prince, or a railway magnate, while to direct a thousand effectively enough to be economical, may safely be said to be a human impossibility. When these seasonal difficulties are added to the geometrical difficulties, it is easy to see that farming must always be an industry of small units as compared with manufacturing, mining, transportation, etc. . . .

SUPREME ADVANTAGE

The supreme advantage, however, of the medium scale of production over the large scale is that the work is performed by those who have a direct, personal interest in the result. There are, therefore, no perplexing labor problems, no questions of the hours of labor or of the relation of employer to employee, to be solved. Even if large-scale farming were technically a little more efficient, these social advantages would be on the side of medium-scale production and would enable it to hold its own in competition with large-scale production. . . .[16]

William J. Spillman

In 1915, W. J. Spillman, together with H. M. Dixon and G. A. Billings, prepared a bulletin which stated:

Within a given region magnitude of business probably has more influence in determining the profit made by the farmer than any other one factor. . . .

[16] Carver, *Rural Economics,* pp. 24–46.

. . . We have here a very conclusive demonstration of one of the fundamental principles of farm management, and that is that one of the most important factors of efficiency in farming is the magnitude of the farm business.

. . . Size of farm, then, is not sufficient; the farm must be properly organized and efficiently managed and must be devoted to types of farming that are suited to the locality and to the business conditions on the farm. . . .

. . . There are other factors which may, in special cases, become more important than magnitude of business. . . .[17]

In 1924 Spillman opened his book on *Farm Management*[18] with a discussion of the measure of success in farming which Hunt had emphasized in his discussion of size of farms. Spillman placed on his title page the following statement, "A farm is successful when it returns a fair rate of income on the capital invested in it and gives the farmer and his family sufficient income to permit a satisfactory standard of living." Spillman concluded from his analysis of survey data that on the two-man farm the income per man is greater than for farms larger or smaller.[19]

Spillman seems to have recognized that men vary greatly in managerial ability and that this fact is significant in determining the size of farms. ". . . the average man's ability as a manager is not sufficient," says Spillman, "for the management of a large business as complex as farming."[20] He said also:

> While the vast majority of farms are small, employing regularly only one or two men, there is occasionally a large farm that is even more successful than the average two-man farm. But every successful large farm owes its success to the unusual ability of its operator. One reason why these large farms are so rare is that there are so few men capable of making them successful. The average successful operator of a two-man farm would fail utterly as manager of a 10-man farm.[21]

In the discussion of size of farms, Spillman did not overlook the importance of considerations of a social and political nature:

> If the average farm of a region be much larger than a two-man farm, too large a proportion of the rural population become mere laborers, without hope of ever becoming owners of farm homes. This does not make for good citizenship. Farm houses under such conditions are also usually so far apart and the country population so small, at least that part of it that feels a real responsibility for the well-being of the community, that it is difficult, if not impossible, to maintain suitable schools, churches, and roads. . . .[22]

John D. Black

John D. Black answered the question as to the terms in which size should be measured — should it be in terms of acres of land,

[17] W. J. Spillman, H. M. Dixon, and G. A. Billings, "Farm Management Practice of Chester County, Pa.," U. S. Department of Agriculture, *Bulletin* 341 (Washington, 1916), pp. 31, 56, 58–59.
[18] W. J. Spillman, *Farm Management,* (New York: The Orange Judd Publishing Co., 1924).
[19] Spillman, *Farm Management,* p. 300.
[20] Spillman, *Farm Management,* p. 307.
[21] Spillman, *Farm Management,* p. 306.
[22] Spillman, *Farm Management,* pp. 306–07.

the amount of labor and capital used in farming the land, or the amount of product of one operating unit — by saying:

For this analysis size will be understood as measured in the ideal way, in terms of either combined inputs or volume of output in the highest-profit combination. . . .

It will be at once obvious that the capacity of the management is going to affect greatly the inputs or volume of output that will give the highest-profit combination. Given a manager of limited capacity, anything more than a small input of the other elements, and hence a small output, will mean rising costs per unit of output and presently reduced profits. . . .

. . . The economic capacity of a manager is obviously very complex . . . it varies because of three fundamental differences between individuals, which may be stated as follows:

First: *Differences in the physical and mental abilities of individuals.* Given two individuals each putting forth the same effort, one may be able to handle a much larger enterprise than the other.

Next: The capacity of an individual as an entrepreneur or otherwise depends upon his *willingness to put forth effort. . . .*

Thirdly: The capacity of an individual depends upon the value he places upon the rewards for his efforts.[23]

C. L. Holmes

On the question of causes of variation in the size of farms in a given type of farming, C. L. Holmes said:

. . . the proprietor of high capacity is capable of handling successfully a larger number of laborers than is his less able neighbor. This means that he is able to conduct a larger business, because with more laborers it will be necessary to have more land, more equipment, and more of all of the things that make up the physical basis of farm production. Granted that he is efficient enough to make a reasonable return from these things, it is obvious that the man of high capacity is able to handle a larger investment and to reap a larger total profit because of his superior capacity. If we carry this analysis forward and examine the effect of larger or smaller capacity on the part of the laborers themselves, we see at once that high capacity on their part carries the possibilities of large-scale organization one step further, since each of these high capacity laborers is capable of handling more land, equipment, and other factors than is the man of lower capacity. Similarly land, livestock, and equipment of high capacity all have the effect of increasing the total size of the business and thus the total investment and total annual turnover, as already pointed out.[24]

In that statement Holmes carried the discussion a stage farther by noting that the capacities of farm hands, machines, and animals, as well as the capacity of the manager, were factors influencing the size of the business which would prove most profitable. This is an obvious corollary to the major premise that the greater the capacity of the farmer the larger the farming business which can be conducted with maximum profit.

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[23] J. D. Black, *Introduction to Production Economics* (New York: Henry Holt and Co., 1926), pp. 542-43, 550.

[24] C. L. Holmes, *Economics of Farm Organization and Management* (Boston: D. C. Heath and Co., 1928), p. 235.

10.

Variations in Production Factors

THE INDIVIDUAL UNIT OF LAND, capital goods, labor, and management vary greatly in their usefulness as instruments of agricultural production. The significance of these variations in quality must be kept in mind if the farm economist is to think clearly regarding the selection and the most profitable organization of these elements. Variation in the qualities of land have long been recognized. The significance of variations in the other factors has been overlooked too generally — although not by all.

The English classical economists, Adam Smith, David Ricardo, and John Stuart Mill, emphasized the economic significance of variations in the productivity of land. They were criticized by Richard Whately, Archbishop of Dublin, for not recognizing the variation in productivity of other instruments of production. In this connection Whately mentioned "all extraordinary powers of body or mind" which give rise to more than usual productivity.[1]

Rogers and Walker

In 1871 J. E. Thorold Rogers expressed the idea of varying abilities of men:

> There is a sort of fertility of men's minds very like the fertility of certain fields. . . .
>
> Just as one field may grow more corn than another field, without putting the farmer to any greater cost in cultivating it . . . so one man may, with no greater cost of preparation than his neighbor, earn a great deal more than that neighbor.[2]

Francis A. Walker, influenced by Whately, called attention to variations in the ability of managers. On this difference he based

[1] R. Whately, *Elements of Logic*, comprising the substance of the article in the Encyclopaedia Metropolitana, with additions, etc. The only complete American edition. From the Eighth London Edition, revised. (New York: Harper and Brothers, 1856), Appendix I, p. 362.

[2] J. E. T. Rogers, *Social Economy* (New York: G. P. Putnam's Sons, first published in 1871, American Edition, 1872), pp. 23, 36.

his theory of differential profits which he indicated is comparable to the rent of land. Walker said:

> To the entrepreneur's share of the product of industry I shall strictly apply the term profits. . . .
>
> In my opinion, profits thus defined bear a strong resemblance to rent. In this view I follow Archbishop Whately. . . . If this view is correct, the principles deduced therefrom will be of very great consequence, not only to political economy, but to social philosophy. . . .
>
> . . . I shall now undertake to show that profits, the remuneration of the entrepreneur or employer, partake largely of the nature of rent, being a species of the same genus. . . .
>
> Now in my view of the question of profits, we find, in the lower stratum of the industrial order . . . a "no-profits" class of employers. Notwithstanding all the magnificent premiums of business success, the men of real business power are not so many but that no small part of the posts of industry and trade are filled by men inadequately qualified, and who, consequently, have a very checkered career and realize for themselves, taking their whole lives together, a meager compensation, so meager that, for purposes of scientific reasoning, we may treat it as constituting no profits at all. . . . From this low point upwards, we measure profits.[3]

Henry C. Taylor

These quotations show that the idea of differences in the qualities of men and differences in the qualities of land were not new subjects when the pioneers of agricultural economics began their work. H. C. Taylor had studied Walker's *Political Economy* at the Iowa State College in 1896 and had recognized that Walker's idea of *entrepreneur* profits applied also to farmers. Furthermore, as a young man fresh from the operation of a farm, he recognized that variation in usefulness was also a characteristic of farm animals and farm equipment.

During the early 1890's, while Taylor was part-time student and part-time farmer, Horace Boies, Governor of Iowa (1890–94), made the statement that if an Iowa farmer were given a farm of 160 acres, free of debt, he would not be able to make a living on it but would run into debt and lose the farm.

Taylor, whose father had acquired more than 600 acres of farm land and paid for it out of the profits of farming during the previous 30 years, argued vigorously that Boies was mistaken, that an efficient farmer could make a good living on 160 acres of land even in those days. This is mentioned as a conditioning of Taylor's mind to appreciate Walker's theory of profits and also to challenge a statement made by Professor Richard T. Ely after Taylor entered the University of Wisconsin as a graduate student.

Early in the winter of 1897 Ely said, in effect, that land ownership on the part of farmers was bound to decline because there was a wide discrepancy between the current rate of interest and the rate of return on investments in farm land. Ely's statement stimulated Taylor

[3] F. A. Walker, *Political Economy* (New York: Henry Holt and Company, Third Edition, 1888, Copyright 1887), pp. 234–37, 239.

to write a paper to demonstrate the efficacy of differential profits of farmers as a means of acquiring landownership on the part of all super-marginal farmers.[4] These stimuli and these ideas resulted in a chapter on "The Economic Properties of the Factors of Production,"[5] in 1905, in which it was pointed out that land, labor, equipment, and management all varied in productivity and that this fact is significant in the choices of these factors, and in organizing and operating a farm. It was also pointed out that there were some significant differences among the factors; that location of land is permanent while capital goods and men are mobile; that after a continent has been occupied the additional land to be brought under cultivation is usually less productive, whereas the new increments of livestock, tools, and machinery may be of the better grades.

On the variation in the qualities of farmers, Taylor said, in 1905:

> The labor of all those who are engaged in agriculture is not equally productive. This is due to variations in the *efficiency* of those engaged in this industry. There are more than five million farmers in the United States. From general observations we know that some of these farmers can scarcely make a living, others live comfortably and gradually save enough to buy a small farm, while still others are very prosperous, living well and accumulating considerable sums of money from year to year. The relative degree of prosperity to which the American farmer can attain is determined largely by his own efficiency.
>
> The variation in the efficiency of the farmers may be either qualitative or quantitative. Qualitative efficiency refers to the return which a man can produce upon a given piece of land with a given supply of capital-goods. Quantitative efficiency refers to the quantity of land and capital-goods which a man can operate.[6]
>
> When viewed from the standpoint of the highest value of the productions of a country it becomes apparent that the farmers who are qualitatively most efficient, should employ the most productive grades of capital-goods upon the most productive land. . . .
>
> . . . The farmers who possess a relatively high degree of qualitative efficiency can win a larger return from land of any grade than can their less efficient competitors, but this extra product due to superior ability is greater on the more productive than on the less productive land and for this reason the more efficient farmers compete only for the more productive land, and are willing to pay more for it than the less efficient farmers can afford to pay. The qualitatively less efficient farmers go on competing for the less productive land until marginal farmers are shifted to marginal land. . . .
>
> . . . To the extent that the better farmers follow their highest economic self-interest they will compete for the better land, and the rent of such land will rise, until, one by one, the less efficient farmers find it preferable to take less productive land at a lower rent. The farmers who are qualitatively most efficient can pay more for the best land than any of his competitors can afford to pay and still receive a larger net profit than he would receive from the less productive land at the rents which the less efficient farmers pay for such land.

[4] H. C. Taylor, "Farm Proprietorship in the United States" (manuscript in H. C. Taylor Archives, dated March 1, 1898). The substance of this paper appears in Part 6. The title was changed to "Tenancy and Farm Ownership."

[5] H. C. Taylor, *An Introduction to the Study of Agricultural Economics* (New York: The Macmillan Company, 1905), Chap. 3.

[6] Taylor, *An Introduction to the Study of Agricultural Economics*, pp. 34–35.

When each farmer has taken the land for which his degree of efficiency enables him to compete to the best advantage, the marginal farmer will be found upon the marginal land, the average farmer upon the average land, and the most efficient farmer upon the most productive land. . . .

. . . it is to the interest of each farmer to select that grade of land which corresponds to his degree of qualitative efficiency.

. . . The more efficient farmer in one branch of agriculture may be the less efficient in another. The best shepherd may be a poor market gardener and *vice versa*. The shepherd will be able to win his largest net profit on cheap land, while the market gardener can do best on expensive lands near the great cities. Yet the general principle holds that the best shepherd can win the largest net profit on the best sheep land, and the best market gardener on the land best suited to his particular line of production.[7]

Not being satisfied simply to state the general economic principles underlying the right combination of the grades of the factors, Taylor gathered concrete evidence of variations in the grades of the factors on specific farms in selected areas. The detailed studies confirmed and concretized earlier findings based upon general observation. Some of the results of the detailed studies were presented, in 1916, at a meeting of the American Economic Association in a paper entitled "Two Dimensions of Productivity."[8] In that paper Taylor changed his terminology. That which he had called qualitative efficiency in his earlier writings he called *efficiency;* that which he had called quantitative efficiency he called *capacity*. The paper reads, in part, as follows:

It is the purpose of this paper to discuss the significance of capacity and efficiency. . . .

CAPACITY

Capacity has been defined as power to receive, absorb, take into, or associate with. . . . It has been recognized since the days of Ricardo that land varies with respect to the amount of labor and capital which can be invested per acre with optimum results, that is, land varies in capacity. Cows vary greatly in the amount of feed which they can consume with optimum results when fed with the same care and by the same man, hence cows vary in capacity. The same thing is found true of every specific class of instruments of production from milk pails to threshing machines. Variation in capacity exists likewise in the human factor. There is a very wide range of differences in men with respect to the amounts of land, labor, and capital they can operate. . . .

EFFICIENCY

Efficiency is defined as a ratio between the energy put in and the results secured. The efficiency of a factor of production is measured in terms of the value of the product per unit of the other factors (of given grades of efficiency) when associated in the most profitable proportions. To illustrate, two pieces of land may yield widely different results per hour of man and horse labor expended upon them by the same man. Two cows may vary widely in the amount of butter fat they yield per pound of feed consumed when the two cows are fed by the same man upon the same feeds.

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[7] Taylor, *An Introduction to the Study of Agricultural Economics,* pp. 60, 165, 169–70, 178.

[8] H. C. Taylor, "Two Dimensions of Productivity," *American Economic Review, Supplement,* 7:49–57 (March, 1917). (Also reprinted.)

The relation of capacity, efficiency, and productivity are easily understood. The productivity of a physical unit of an instrument of production, as an acre of land or a cow, is the resultant of capacity and efficiency. The product divided by the capacity equals the efficiency. In other words, capacity relates to "input"; efficiency to "output" per unit of "input"; and productivity relates to the total product per acre of land, per cow, or per man. The calculation of efficiency may be made in terms of physical product or in terms of the value of the product. In analyzing the productivity of cows and other movable instruments of production, physical productivity is often the better basis of comparison because of differences in values at different locations. In the case of immovable instruments of production the value of the product is the more satisfactory basis of comparison. . . .

A few facts may help to make clear the ideas in mind. In recent years a great deal of first-hand study has been made of the conditions of productivity in agriculture. The survey method and the accounting method have been largely used in this work. . . . [A survey was made of 51 farmers.] The returns which these farmers secured per dollar of annual outlay varied from 76 cents to $3.05. In this calculation the annual outlay included all operating expenses, including depreciation and interest. . . . [There was] a variation from $1,734 to $293 in the annual outlay with which these farmers associated themselves. . . . The variations in total product per man range from $3,644 to $686. The farmers, as the residual claimants, received payments for their efforts varying from $1,961 to minus $338. . . . there is no definite relation between a man's capacity as measured by his outlay and his efficiency as measured by product per unit of outlay. A man with high efficiency may have low capacity and the man with high capacity may have any degree of efficiency. These facts are brought forward to illustrate the well-known fact of variations in the ability of men and to note that at least two measuring sticks are needed if we hope accurately to measure man's ability.

. . .[A study was made, also,] of the differences which exist in one class of instruments of production, namely, cows. . . . [A study of 26 cows under one management] all pure-breds and supposed to be very high class, showed a range in . . . [value of product per dollar of input,] from $2.46 to $1.44, the surplus product, over feed cost, being more than three times as great from the most efficient as from the least efficient. The range in capacity was from $99.83 to $82.69. . . .

CHOICE OF GRADES OF FACTORS

. . . From the point of view of the effective management of farms the significance of this analysis of the grades of the factors of production lies in its relation to the problem of *right choice* of the instruments of production which are to be combined under a given management.[9]

The view that the best farmers tend to move to the best land and use the best equipment has been accepted by some students and challenged by others. Taylor was endeavoring to point out lines of choices and actions which would enable farmers to secure the largest net return. When he returned from this to stating what actually happens, he recognized inertia, custom, family ties, and many other non-economic influences.

Economic rents, and the prices of cows, etc., tend to force the inefficient men to the lower grades of land, but it is left to the lure of profits to entice the more efficient to the better grades. Lure of

[9] Taylor, "Two Dimensions of Productivity," *American Economic Review, Supplement,* 7:49–52.

profits invites but does not command the efficient farmer who can make a living on any grade of land.

This subject of the grades of efficiency of the factors of production did not receive much attention from other pioneers in agricultural economics. They recognized the fact of differences in the qualities of land, cows, equipment, and men, but they apparently were not impressed with the economic signficance of these facts in their relation to the most profitable organization of the farm. Taylor restated his views on this subject in later editions of his *Agricultural Economics,* and some of the other writers recognized the significance of the variations in the qualities of the factors of production.[10]

Farm management surveys and farm accounting work have continually shown a wide range in the incomes of farmers in any given region. As a rule, farmers with larger farms have made larger incomes, and farmers with high yielding crops per acre and with high yielding livestock per unit of feed received higher net incomes than farmers with low yielding crops and livestock. The conclusion usually reached is a restatement of the same fact — it pays to produce high yields on a large scale. That cannot be questioned, but who can do it and how?

This complex problem becomes even more involved for each extension worker as he meets the wide range in intelligence, judgment, energy, time-sense, foresight, purposefulness, and self-discipline that exists among the farmers with whom and for whom he is working. This complication has been recognized by leading thinkers in the field of farm economics, but few of them have undertaken to bring the variability of the human factor into consideration.

Two farms, side by side, have approximately the same soil, topography, climate, and weather conditions. One is yielding a handsome profit; the other is registering a loss. Why the difference? The major and fundamental reason lies in the qualities of the men who operate the two farms, and yet these differences were long passed over without consideration.

It is important to know the causes of existing differences in the earning power of farmers, the extent to which these differences are fixed by nature, and the prospect of improving the capacity and the efficiency of farmers by education.

E. C. Higbie

While the study of the human factor in farming has been long neglected, a beginning has been made. Initial efforts were made by students of education and not by students of agriculture. In the

[10] H. C. Taylor, *Agricultural Economics* (New York: The Macmillan Company, 1919), Chap. 12; H. C. Taylor, *Outlines of Agricultural Economics* (New York: The Macmillan Company, 1925), Chap. 11; J. D. Black, *Introduction to Production Economics* (New York: Henry Holt and Company, 1926), Chap. 13; C. L. Holmes, *Economics of Farm Organization and Management* (Boston: D. C. Heath and Company, 1928), Chap. 12.

early 1920's Edgar C. Higbie presented a thesis on the subject of the relation of various qualities of men to financial success in farming.[11] The study was only a beginning but it was significant, first of all, because it was a courageous attack upon a difficult problem. Although Higbie's methods of gathering data may be looked upon as amateurish, it should be noted that he did not have public funds to expend in gathering data. In spite of this he opened up a new subject and threw much light where there had been darkness. Higbie found managing ability, business ability, native intelligence, technical information, and field and chore skills were of primary importance in determining financial success in farming.[12] Of these qualifications, Higbie said:

> Managerial ability . . . is vital to success in farming, and it is a quality that depends far more on native intelligence than on education or training. It and business ability probably have many common elements which in turn are conditioned by a special type of intelligence — a type of intelligence which should be subjected to further analyses.
>
> Next to managerial ability among the causal factors of success . . . stands business ability. . . . The third characteristic . . . is native intelligence. . . . This quality enters into other factors and must be considered largely as a cause of those other factors.[13]

After presenting a page of statistical correlations, the author concluded:

> It would seem that we could draw the conclusion from the above that native intelligence . . . is a very vital, causal factor conditioning managerial ability and business ability and technical information. The importance of this fact in working out methods of training and in vocational direction can scarcely be over-estimated.[14]

Native intelligence was defined as "Original mental ability regardless of education or special training; mental alertness, thought power."[15]

With regard to technical information, by which Higbie meant "Working agricultural knowledge or facts acquired by attending an agricultural school, short courses, institutes or by reading farm papers, bulletins, etc.,"[16] he said:

> . . . [it] has an important place in good farming. Nevertheless there are latent suggestions that the community average of information is not greatly exceeded by the better farmers of the group. . . .
>
> Field and chore skills contribute directly and decidedly to success in farming. These skills are very largely dependent upon native intelligence — a fact which again suggests a deeper study into the type of intelligence for it may be found that a specialized intelligence is the background necessity

[11] E. C. Higbie, *An Objective Method for Determining Certain Fundamental Principles in Secondary Agricultural Education* (Ph. D. Thesis, Columbia University, 1921 [published privately]).
[12] Higbie, *Secondary Agricultural Education*, p. 22.
[13] Higbie, *Secondary Agricultural Education*, p. 38.
[14] Higbie, *Secondary Agricultural Education*, p. 39.
[15] Higbie, *Secondary Agricultural Education*, p. 8.
[16] Higbie, *Secondary Agricultural Education*, p. 8.

in farm success. If so, the next step would be clear — a step involving determinations of the type of intelligence in question, followed by tests to ascertain its absence or presence in the individual.[17]

After further summarizing his findings, Higbie appears to have felt that he had touched only superficially upon the basic elements in the human factor that lead to success and that much further study was needed. This thesis has been quoted because it is a piece of pioneer work that consciously opened up a difficult subject.

A Minnesota Study

Another monograph which throws considerable light on the qualities of farmers and the influence of education upon their success was published by the University of Iowa in 1930.[18] However, that work did not continue the Higbie attack on the problem as directly as did a Minnesota bulletin published in 1932.[19] The purpose of the latter bulletin was to make a study of the human factor as it affected financial returns on Minnesota farms on which farm accounts had been kept for several years. The study was described as follows:

> In this study an attempt was made to determine some of the reasons why the farmer carries on his farming business with the degree of efficiency which he does. . . .
>
> The farmers furnishing the data for this study were co-operators in a farm management service project started in 1928. . . . They were keeping financial and production records with the help of a field man who visited them several times a year to check the records for completeness and accuracy. . . . These contacts with the public agencies involved developed a feeling of confidence on the part of the farmers in the workers who were aiding them in a study of their farm problems. They were interested in learning the factors that affect financial earnings and productive efficiency in farming. It would hardly have been possible to secure as full and detailed personal information from a group of farmers whose confidence had not already been established in some such manner as this.[20]

A brief statement of the findings will serve:

A tabulation of the men's farm experience shows that approximately 76 per cent of the men on farms of 120 acres or less had had experience operating larger farms. Seventy per cent of the men on small farms had no desire to op-

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[17] Higbie, *Secondary Agricultural Education,* pp. 41-42.

[18] O. S. Hamer, "The Master Farmers of America and Their Education," in *University of Iowa Studies in Education,* v. 6, No. 2, first series No. 193. Adult Education Series No. 1 (Iowa City: published by the University, 1930).

[19] W. W. Wilcox, A. Boss, and G. A. Pond, "Relation of Variations in the Human Factor to Financial Returns in Farming," Minnesota Agr. Exp. Sta. *Bulletin* 288 (University Farm, St. Paul, 1932). The U. S. Department of Agriculture, Bureau of Agricultural Economics, cooperated with the Minnesota station in the preparation of this bulletin, i.e., Wilcox was a member of the staff of the B. A. E.; Pond and Boss were at Minnesota. C. L. Holmes and W. J. Roth, of the B. A. E., and O. B. Jesness and C. C. Zimmerman, of the University of Minnesota, cooperated with the authors in planning the study and gave aid and advice in carrying it out and preparing the bulletin. See also W. W. Wilcox and O. G. Lloyd, "The Human Factor in the Management of Indiana Farms," Purdue University Agr. Exp. Sta. *Bulletin* 369 (Lafayette, 1932). This Indiana bulletin follows the same general idea as the Minnesota bulletin but is less complete. See also W. W. Wilcox and G. A. Pond, "A Study of the Human Factor in Farm Management," in the *Journal of Farm Economics* 14:470–79, (July, 1932); and C. L. Holmes, "Agricultural Entrepreneurship," in *Social Science Research Council Report No. 13, Research in Farm Management: Scope and Method,* (New York City, June, 1932), pp. 313–17.

[20] Wilcox, Boss, and Pond, Minnesota *Bulletin* 288, pp. 3–4.

erate larger farms. The rest were kept from attaining their desire by lack of capital and inability to buy adjoining land. Eighteen per cent of the men thought they had the optimum size of business, considering their managerial ability. This leaves 52 per cent of the men on the small farms who definitely prefer the mode of life and the restrictions of income on the small farms to the more strenuous, less private life, which must be lived by the operator of the larger farms.

These are only two concrete examples of how non-economic motives influence a farmer's financial earnings. In no other industry is the home so much a part of the business as in farming, and probably no other industry is as much influenced by non-economic motives as is agriculture.[21]

In considering causes of differences in income as related to farmers themselves, the authors said:

One of the first series of differences it seemed well to analyze was the inherited variation in capacity along several lines, such as judgment, ambition, and emotional drive. Standardized psychological tests were considered as a measuring device only to find several serious objections to their use. Most psychological investigations have been conducted with students, and the investigators had complete control and unquestionable authority to compel the student to take the test. The farmers from whom these data were gathered were busy men living too far apart to attend a central meeting. This made it impracticable to apply either group or individaul psychological tests in detail.[22]

A study of the progress of these farmers' children in school showed that children of the more successful farmers made better progress, which was interpreted as indicating "the presence of differences in innate qualities associated directly with differences in success in farming."[23] For the farmers themselves, a test was made of their agricultural knowledge by asking each farmer to answer 50 agricultural questions, about which the bulletin stated:

Several underlying relationships should be considered in interpreting the results of such a test. One's knowledge regarding a given subject at a given time is largely the result of three sets of phenomena: the ability to acquire and retain knowledge, which the person inherits; the experiences the individual has gone through, that is, his environment, training, and other related factors; and his motivation to acquire knowledge in that particular subject, which may be influenced by many things such as general health, environmental and fortuitous circumstances, and inherited tendencies. . . .

. . . The scores ranged from 43 to 95, showing a great variation in the ability to answer the questions correctly. A reasonable interpretation of these scores is that they tend to measure differences in the agricultural knowledge of the operators, of which the test questions are a sample, and they also indicate, to a certain extent, variations in the mental ability of the individuals, which is at least partially a result of inherited differences.

An analysis of the relationship of these scores to the operator's earnings . . . indicates in general that better than average test scores and better than average earnings are associated.[24]

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[21] Wilcox, Boss, and Pond, Minnesota *Bulletin* 288, p. 18.
[22] Wilcox, Boss, and Pond, Minnesota *Bulletin* 288, p. 19.
[23] Wilcox, Boss, and Pond, Minnesota *Bulletin* 288, p. 21.
[24] Wilcox, Boss, and Pond, Minnesota *Bulletin* 288, pp. 21–22.

Mental alertness showed a strong positive relation to labor income; likewise ambition.

In considering differences in the men themselves, a comparison of their relative ranking on ambition, mental alertness, and interest scores . . . indicates that they differ significantly in these characteristics. The men of the high-earning group had scores on mental alertness averaging 47 per cent higher than the average score of the low-earning group and 18 per cent higher than the average score of the middle group of farmers. The farmers of the high-earning group averaged 39 per cent higher on ambition scores and 36 per cent higher on interest scores than the low-earning group.

A careful qualitative appraisal of the dominant characteristics of each man leads to the belief that there is more difference between the groups in the factor "ambition" than is implied by the relative scores. . . . At least eight of the high-earning group are keen farmers who are primarly interested in making their farm operations yield high net returns. They might be characterized as being willing to go to considerable length to increase their farm earnings. They spend practically all their energies in that one direction. The other four might be characterized as interested in making a good income but more easily satisfied in a monetary way. They wish to make the most economical use of their resources but are also quite as much interested in other phases of life. . . .

Six of the men in the middle group might be classified in the same manner as the eight above. There is, however, a slight difference in the quality of the ambition in this group, that is, these six men, altho ambitious to make their farms as productive as possible, seem not to have as much tenacity of purpose as the first group. In some cases they show periodic lapses in their interest in keeping every part of the farm returning income to full capacity. The other six men are interested in receiving high earnings from their farms, but they are not sufficiently interested to exert themselves greatly to increase their earnings. In some cases they are not interested in any change in their methods of farming, feeling that their combination of psychic and monetary income is most satisfactory under the present arrangement. . . .

Tied up closely with differences in ambition are differences in interest. A qualitative characterization of the first group on this factor would describe them as feeling that farming was their chosen occupation and their chief interest in life. They felt that farming was an occupation on par with any other and were proud to be members of such a group. Contrasted with this, several members of the low-earning group wished to go into some other occupation and constantly regretted the fact that it was impossible to do so. . . .

. . . Differences in judgment or wisdom of decisions are recognized as one of the important sources of variations in farming practices and hence in farm earnings. . . . Even tho it is impossible to measure the difference between the groups on the factor of "judgment" as compared with the other factors that were found to be influential, a good acquaintance with the men and their farming plans leads the writers to emphasize the fact that differences in the wisdom of the decisions of the men was one of the most important factors influencing their relative earnings. . . .

CONCLUSION

In considering the findings of this study as a whole, the data seem to point to variations in three stimulating influences or factors of motivation and one of ability that are directly reflected in the earnings or business success of the farmer. The factors of motivation are "interest," "need," and

"ambition, or will." "Judgment," the factor of ability, is conditioned, in part at least, by the factors of motivation. . . .

Good judgment and wise decisions are the very foundation of any manager's success. To a large extent, the balance sheet at the end of the year is a reflection of the soundness of the judgment and the wisdom of the decisions which the manager exhibited the preceding year. . . .

. . . It will be found that judgment-forming ability is a result of many factors. Experience is one of the first variable factors affecting judgment. Training in school and at home is important. Health, not only at present but also throughout life, has had an effect on the use made of opportunities to gain knowledge and experience. The motivating factors of interest, need, and ambition have had their influence on the individual's course of life up to the present and therefore have influenced his judgment-forming ability. In short, altho in some cases the upper limit has been reached in the increase in ability to make wise decisions owing to a subnormal inheritance, a great number of the men are still improving their ability by acquiring new information and new experiences every day. . . .

The findings of this study are highly suggestive. In general, there is no satisfactory substitute for intelligence, interest, and ambition in the farm operator. . . .

. . . the operator's economic status or earnings is usually a result of his own ability as a farm manager.

It is evident that there is some factor common to parents and children associated with rapid progress through school on the child's part and better than average earnings on the parent's part. This is probably superior innate ability.[25]

Further Study Needed

All of these studies of the human factor, while valuable, leave the student with a desire for more fundamental knowledge. Insofar as the differences in abilities of men are inherent and not subject to change by education, further research should pave the way to better occupational guidance based upon aptitude tests. Further studies should designate the human qualities which can be improved by education. An accompanying step will be to develop suitable educational methods of effectuating the improvements. This will relate to school training and to adult education. The development of the man, the whole man, is, or should be, the aim and the end of education. Intangible values, as well as money values, should be considered in the measurement of success. Since our knowledge of the characteristics of the human factor are meager and our methods of improving human qualities are inadequate, there is opportunity in this field for joint effort of economists and psychologists which should prove highly rewarding.

[25] Wilcox, Boss, and Pond, Minnesota *Bulletin* 288, pp. 34–36, 39–43.

11.
The National Viewpoint

In his discussion of the economics of farm management Taylor did not stop with the farmers' point of view. The record shows that prior to 1911 he included in the outline of his course in agricultural economics at Wisconsin "Agricultural Production From the National Viewpoint."[1] The content of the discussion under that heading was not published until 1919, when the title was changed to a question, "What Should the Nation Produce?" While the title was narrowed, the scope continued to include the various phases of the economics of production from the statesman's point of view. A few excerpts from that chapter will indicate the lines of thought:

> To the extent that human desires are wholesome, values may be made the basis of determining what a nation should produce, for human desires reflect themselves in values. *The highest value of the productions of a country has, therefore, been set forth as a practical economic ideal for the statesman.* It has been said that "the prosperity of a nation is in proportion to the value of its productions."
>
> It is necessary, in order that this national ideal shall be attained, that the labor and capital of a country be properly distributed among the various lines of economic activity. . . . The necessity of this proper adjustment of the productive forces should ever be kept in mind in the discussion of the movements of population from country to city, or vice versa.

National Policy

> When the *productive forces are properly distributed* among the various lines of production, and where the relative values of products are not to be directly affected by public action, it would seem that a just and practical ideal to be held in mind by the statesman when passing judgment upon what crops should be grown, the management of live stock, the intensity of culture, the size of farms, and the laws which limit and define farmers' rights in their relations to each other, to their landlords, to laborers whom they employ, and to those to whom they sell their products, would be the *highest long-time average value of the farm products of the country as a whole.*
>
> The economic policy which should be followed by a nation will depend largely upon the prospects for world peace and the safety of international trade. Were world peace assured, a world economy would be desirable, but

[1] H. C. Taylor, "The Place of Economics in Agricultural Education and Research," Wisconsin Agr. Exp. Sta. *Research Bulletin* 16 (Madison, 1911), pp. 128–30.

at the present time the student is constrained to give due attention to the importance of the all-round development of agriculture with a view to being able to feed and clothe the people with a minimum of commerce in times when all international law is swept aside.

The opinion one will hold regarding free trade and protection depends in part upon one's judgment with regard to future peace. If we must become self-sufficing as a nation, *protection is one means of inducing farmers and manufacturers* to produce commodities which they would otherwise find unprofitable. *The national policy should be the one which will yield the maximum well-being for the people of the nation through a long series of generations.*

There are many conditions under which it is desirable to stimulate the production of articles which the farmers have not on their own account found occasion to produce. The absence of production may be due to lack of knowledge of the profits, lack of skill in the new line of production, or it may be due to the fact that the crop is temporarily less profitable than some competing crop, but in the long run would be more profitable. Where a crop is less profitable than another, and this is due to permanent physical conditions, only the necessity for a self-sufficing national policy will justify stimulating the farmer to produce the crop. But where the conditions which make the crop unprofitable are temporary, social conditions which may be changed, such as sparse population, lack of knowledge or skill, the case is a very different one. It may pay to stimulate immigration and education, and give bounties or tariff protection which will make it profitable for farmers to take up the new lines of production.

In general, any industry which can be established in a few years, and which when once established will be able to stand on its own merits without government stimulus, should be stimulated during the period of its introduction. During the infancy of the new crop or agricultural industry, the labor and capital expended may add less to the national dividend than some old crop or industry, but this loss is only apparent, and is *really chargeable to the capital account of the country if when established the new crop pays better than the one it displaces.*

In addition to the economic and political conditions which have been considered above, there are ethical questions which should not be lost sight of by the statesman in settling the question of what the farmers of a nation should produce. Many statesmen will feel that the desires of men should be curbed in the interest of human welfare. This may lead them to study physiological and ethical principles with a view to eliminating certain crops or products made from farm crops which are injurious to mankind.[2]

[2] H. C. Taylor, *Agricultural Economics* (New York: The Macmillan Company, 1919), pp. 69–70, 75, 77, 78.

PART FOUR

FACT GATHERING AND FURTHER STUDY OF FARM MANAGEMENT AND AGRICULTURAL ADJUSTMENTS

12.

Crop and Livestock Estimates

THE DEVELOPMENT OF STATISTICAL WORK by the United States government is of interest because it is a service which provides a very large part of the data essential to adjustments of agricultural production to market demands, the basis of intelligent marketing, the guide to processors of farm products and to all those who perform middleman services. The history of the crop and livestock reporting work makes clear that the great advance in the gathering of useful statistics has come from patient effort to place side by side a multitude of simple facts, each well known by some one pearson. By aggregating these facts, a comprehensive picture of the agriculture of the nation can be perfected which should be as clear and authentic as the picture the individual farmer holds in mind of his own farming. This picture, and the series of successive pictures, are essential to clear thinking on economic questions of farm management and marketing. This series of pictures is likewise essential to the development of statesman-like national policies affecting agriculture.

Beginnings of Crop Estimating

The year 1839 was one in which there was much stirring of the waters with respect to the need of agricultural statistics. Indeed that year marks the beginning of the national collection of agricultural statistics in the United States. Commercial economy had been developing rapidly after completion of the Erie Canal and the beginnings of the construction of the Chesapeake and Ohio Canal and other water routes and turnpikes and the beginnings of railroad building. With the development of transportation and growth of markets, farmers were depending less and less upon the self-sufficing economy and were giving more and more attention to producing for the market. With commercial economy came interest in market prices. There was a feeling that merchants were over zealous in buying at low prices. The current theory of prices was that they were determined by supply and demand.

But it was recognized that in order for the law of supply and demand to function accurately there had to be widely disseminated knowledge of the current supply, i.e., of the size of the wheat crop, for example, in the given year. The demand was assumed to be fairly stable one year with another, with an upward trend due to increase in population, but crops were known to vary greatly from year to year owing to weather and other conditions. It was believed that the merchants were inclined to promulgate false ideas with regard to the large size of crops in order to depress prices. In the absence of dependable estimates as to the yield of varous crops, the farmer was said to be at a grave disadvantage in selling his products. Furthermore it was conceived that if too much had been produced and prices were too low, the remedy was to produce less; that if farmers knew the quantity produced of each crop entering the market, that fact would serve as a guide to his next year's plantings. In due course, as the outlook enlarged, it became clear that the farmer and the merchant needed information not only of supply in the United States but in all the countries competing in the common foreign market.

In addition to facts about supply there was needed a published record of the prices at which the given supply had sold. With a record of the price levels resulting from given supplies in previous years available to the farmer and to the merchant, a basis was provided for making a fairly accurate preliminary estimate as to how a given increase or decrease in supply would affect prices. Of course new elements that might affect the results had to be taken into account, but the basic facts of supply and the resulting price were recognized as fundamental. It was in that setting that the development of the crop estimating service in the United States took place.

On January 21, 1839, Congressman Isaac Fletcher, Chairman of the Committee on Patents of the House of Representatives, wrote a letter to Henry L. Ellsworth, Commissioner of Patents, which, among other things, requested information relative to "the practicability of obtaining agricultural statistics."[1] Ellsworth, a son of a Chief Justice of the Supreme Court and himself a man of notable intellectual and agricultural attainments, responded with enthusiasm:

> I rejoice that agricultural statistics have been deemed worthy of an inquiry by the honorable committee.
>
> Other enlightened nations have ranked such information amongst the most important, in providing for the public wants, guarding against speculation, and as a means of estimating the probable state of exchange, so far as it is affected by a surplus or scarcity of crops.
>
> The benefit of national statistics, as well as the practicability of obtaining the same, may be estimated from the success attending the efforts of individual States, and particularly of Massachusetts. . . .
>
> The Commissioner of Patents would cheerfully, if desired, collect, as far

[1] U. S. Commissioner of Patents, *Report,* 1838 (Washington, 1839), p. 57.

as possible, agricultural statistics from different sections of the United States, and present the same to Congress, with his annual report. Such statistics might be useful to the Government in their financial estimates, and certainly would be to the citizens generally.[2]

Commissioner Ellsworth also asked for a small appropriation for this work from the Patent Office fund. In the Appropriation Act of March 3, 1839, Congress specified that $1,000 of the Patent Office funds might be used by Ellsworth for collecting agricultural statistics and for other agricultural purposes. As a matter of fact, Commissioner Ellsworth did not publish production estimates until after the census of agriculture for the year 1839 was avaliable to be used as a bench mark for making the estimates. In his report for 1841, estimates were included for the year's production of wheat, barley, oats, rye, buckwheat, corn, potatoes, hay, flax, and hemp, tobacco, cotton, rice, silk, sugar, and wine.[3] In addition to the census reports, Ellsworth secured information from agricultural papers, from reports of agricultural societies, and from "individuals from every section of the country."[4] Contrasted with the large force participating in making government crop estimates in recent years, it is interesting to note that in commenting on estimates of the crop of 1841 Ellsworth said:

> . . . could the entire attention of a competent person be devoted to the preparation of an annual Register, to be formed by collecting, comparing, and classifying the various items of intelligence, and conducting an extensive correspondence with reference to this subject, an amount of statistical and other information relating to the agricultural products of our country might be furnished, which would be exceedingly valuable to the whole nation, . . .[5]

As the census of 1840 did not report acreages of various crops on each farm, figures for production in 1839 provided the census basis with which Ellsworth started. He noted that the agricultural population was increasing rapidly in certain areas, "in some of the States reaching as high as 10 per cent, as estimated by the ten years preceding the year 1840."[6] Ellsworth reasoned that rapid settlement of newer states meant an increase in the number of farmers and thus in acreages in crops. In the absence of an acreage base for estimating this expansion of the area of crop production, Ellsworth turned to population data and used the previous rate of increase in population in each state as a basis of estimating increase in production due to expansion of acreage in crops. That expansion figure and an estimate of yield as influenced by weather conditions were important in making estimates of 1841 crops based upon census figures for 1839.

In the 1842 report, Ellsworth included two pages of tabulation of estimates identical in form with that for 1841.[7] Comments on the

[2] U. S. Commissioner of Patents, *Report,* 1838 (Washington, 1839), p. 58.
[3] U. S. Commissioner of Patents, *Report,* 1841 (Washington, 1842), pp. 64–65.
[4] *Report,* 1841 (Washington, 1842), p. 68.
[5] *Report,* 1841 (Washington, 1842), p. 68.
[6] *Report,* 1841 (Washington, 1842), p. 68.
[7] U. S. Commissioner of Patents, *Report,* 1842 (Washington, 1843), pp. 4–5.

purpose of estimates and on methods of estimating production for 1842 contain the following remarks showing progress in the growth of economic thinking and gave Ellsworth's ideas of the purpose of agricultural statistics:

> The present, too, seems the proper time for us to give to this question of the disposal of our immense surplus a thorough, calm, and deliberate investigation. On the decision of it the prosperity of this great country depends. . . . Our object should not be so much to stimulate to larger production, as to open the ways and means by which the husbandman shall have a market, and shall know how his labor and skill may be most available. For this purpose, he needs a yearly and more full survey of the crops, the markets, and prices, than he can now have. Thousands and millions of dollars are lost to our country by the misemployment of productive industry, from the mere want of information. . . . The return of the census every ten years is not itself sufficient. It may prove a starting point for each period, and one at which corrections may be made; but, from year to year, there should be imbodied the best results of investigation, carefully and thoroughly conducted. Something has, indeed, been thus attempted, in these agricultural statistics, subjoined to the report of the Commissioner of Patents . . . but this is not enough, or as much as ought to be done.[8]
>
> The great and general elements which must be taken into consideration in forming this annual estimate are, (and this is also a stated or permanent cause) —
>
> 1. The *annual increase of our population* naturally, and also from emigration, and hence, consequently, of our laboring force. . . .
> 2. The quantity of *new land* now first rendered productive. This applies with much force to several of the later States. . . . Similar to this, too, is the restoration of lands either wholly or partially worn out, from excessive cultivation, by enriching them with suitable manures. Considerable attention, and with good success, has been directed to this object, for the last two or three years, in the older States. Thus, many acres of land, in Virginia, have been recovered by marling.
>
>   The opening, too, of new means of communication, (railroads, canals, &c.,) bringing the market nearer, has induced large appropriations of land to particular crops. . . .
> 3. Yet another element of calculation deserving notice is what may be called, perhaps, accidental or occasional — such as the failure of some particular crop the previous year, and the endeavor to supply the deficiency by planting more seed and increased attention the next year. So the failure of an earlier crop, if known in time, may lead to the attempt to produce the larger growth of a succeeding one. . . . The drain likewise on the stock that may be on hand, by a lively market, may operate in a similar manner. . . .
> 4. The operation of striking peculiarities of the season, the increase or decrease of the insect tribes that are hostile to various crops, may very properly be ranked under this class of accidental causes. . . .
> 5. There is yet another element to be regarded in forming our estimate — that which is found in the superior productiveness of the crops, arising from the influence of the weather, improved seeds, implements of husbandry, tillage, and various unmentionel causes, combined. . . .

All of these elements have been kept in view in the preparation of these statistics; and their compounded influence, as far as it might be estimated, has

[8] *Report,* 1842 (Washington, 1843), pp. 64–65.

been the rule of judgment, in connexion with the actual statements of the crops, in the various parts of the country. . . .[9]

These comments on method are followed by 25 pages of text relating to various crops which indicate the kind of crop information the estimators had in mind while making up statistical tables of production. Ellsworth's reports for 1843 and 1844 contain crop production estimates based upon the same "elements" as were described in reports for 1841 and 1842.

Ellsworth resigned in 1845 and was succeeded by Edmund Burke as Commissioner of Patents. Tables of estimates for 1845 crops were published in the same form as in previous years. Burke explained why no estimates were published in 1846:

> Congress, at its last session, having declined to make the usual appropriation for the annual agricultural report made by this office, I regarded the act as an instruction to me not to prepare a report of that character for the year just past. . . .[10]

In 1847, estimates were called for again. The task of renewing the estimates was difficult because one link was missing in the chain leading back to census data gathered in 1840. Nevertheless the table of estimates was published for 1847.[11] In 1848 a circular of inquiry, sent over the name of Commissioner Burke to a newly created list of correspondents, stated: "I am desirous to obtain the estimated percentage of increase or decrease of crops of this current year, as compared with those of the year 1847."[12] The circular also asked for information regarding minor crops, livestock, and livestock products. The tabular estimate for crops for 1848 differed from that of 1847 only by the omission of the column for pounds of silk cocoons. That report gave promise of renewed efforts to improve reports on agriculture. The Patent Office estimate, made by Burke, for cotton for 1847, was 1,042 million pounds; that for 1848 was 1,066 million pounds; and the census figure for 1849 was 988 million pounds. Figures on cotton production assembled by George K. Holmes for these dates are:

1847	1,017 million pounds
1848	1,250 million pounds
1849	988 million pounds.[13]

Holmes used "the commercial crop as published by Latham, Alexander & Co." for the years 1847 and 1848, and used census figures for 1849, which seems to indicate that Burke's estimate for 1848 was too low rather than too high. The corn estimate for 1847 was 539 million bushels, the estimate for 1848 was 588 million, and

[9] *Report*, 1842, (Washington, 1843), pp. 8–10.
[10] U.S. Commissioner of Patents, *Report*, 1846 (Washington, 1847), p. 8.
[11] U.S. Commissioner of Patents, *Report*, 1847 (Washington, 1848), pp. 84–85.
[12] U.S. Commissioner of Patents, *Report*, 1848 (Washington, 1849), p. 339.
[13] G. K. Holmes, compiler, "Cotton Crop of the United States, 1790–1911," U. S. Department of Agriculture, Bureau of Statistics, *Circular* 32 (Washington, 1912), p. 7.

the census figure for 1849 was 592 million bushels. This is an indication that there was merit in the estimates even though the 1848 figure had to rest back upon census figures nine years old with one link in the chain of estimates — 1846 — missing. The estimates for wheat do not look so good. There seems to have been an overestimate for 1847 and 1848 or a low yield for 1849. The estimated production of wheat for 1847 was 114 million bushels, that for 1848 was 126 million, while the census figure for 1849 showed 100 million bushels.[14]

Before condemning the wheat estimate for 1848 on the basis of census figures for 1849, we need to know more about the character of the crops for those two years. "The crop of 1848 was, undoubtedly, one of the best and largest we have ever grown."[15] The same writer had a different impression of the 1849 crop. He continued:

> The foreign market, on the terms it can now be reached, is of great value to us, as generally receiving any surplus we may have to spare at remunerating prices: but it is not always this will be on hand; and I venture to predict that the *present* will be found to be one of those years, as I agree with one of our most intelligent and best informed Brandywine millers, Mr. Lee, "that the price of wheat and flour will have to advance to the point of preventing any considerable exports, or before next harvest it will be found we are short, and the price will go up very much."[16]

The price prediction proved to be correct. The average price of wheat on the Chicago market was 56 cents per bushel in June, 1849, as the marketing year for the crop of 1848 was drawing to a close. One year later the average June price in 1850 was 90 cents per bushel. But when the 1850 wheat crop came into the market, prices receded toward the old level, reaching 58 cents by August, 1850, compared with 62 cents for August, 1849, and for August, 1848.[17] In the light of these facts the wheat estimate for 1848 does not look bad.

Under the Act of March 3, 1849, creating the Department of the Interior, the Patent Office was transferred to that department from the Department of State. The new Commissioner of Patents who took office in 1849 was Thomas Ewbank, who failed to appreciate the value of crop estimating work. He explained the discontinuance of estimates of crop production as follows:

> The value of agricultural statistics depends on their general accuracy and being reliable for all business purposes. . . .
>
> In the absence of a regular census, there is no way to determine, with any approach to accuracy, the amount of grain and provisions annually produced; and it is thought better to make no estimates at all, so far as the official returns are defective, than to fabricate statistics by mere guessing. . . .

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[14] Sources of corn and wheat estimates: U. S. Commissioner of Patents, *Report,* 1847, p. 84; *ibid.,* 1848, p. 92; and, for 1849, U. S. Department of Agriculture, *Yearbook,* 1920, pp. 537, 550.

[15] C. P. Holcomb, "The Wheat Crop of the United States," in U. S. Commissioner of Patents, *Report,* 1849 (Washington, 1850), Part 2, p. 215.

[16] Holcomb, "Wheat Crop," U. S. Commissioner of Patents, *Report,* 1849 (Washington, 1850), Part 2, p. 222.

[17] Prices from files in statistical pool, U. S. Department of Agriculture, Division of Statistical and Historical Research, compiled from Chicago newspapers by James E. Boyle. Prices are the average for high and low for each month.

. . . So far as reliable statistics are concerned, all our farming operations are conducted in midnight darkness. Nothing is so much needed as the annual record of trustworthy facts, extending over all the States, setting forth the productive power and value of both land and labor, when employed to the best advantage. So soon as this shall be done, whether by State Legislatures or Congress, it will be seen that the labor and soil of one farmer give twice as good returns for the benefit of himself and the community at large, as do the labor and soil of another, although the land of both may be alike productive. The returns procured through the medium of a few plain, simple questions, put by the assessors or collectors of taxes, would demonstrate the truth of the above remark; and, when demonstrated, those who fail to use their means to the best advantage will discover their errors and immediately change for the better.

So soon as legislatures shall be willing to promote improvements in tillage and husbandry, nothing is easier than to effect the desired object. Bring the practical results of the art, the science, and the energy devoted to agriculture often before the public, and the influence of thousands of good examples will tell powerfully in favor of universal advancement. . . .[18]

Thus ended annual estimates of crop production by the Patent Office. It is a pity that Ewbank did not have the understanding, the vision, and the will to perfect the system of annual estimates of crop production initiated by Ellsworth with courage, insight, outlook, and purposefulness, and carried forward so ably under Burke.

During the 13 years, 1849–61 inclusive, when crop production estimates were not being made by the agricultural division of the Patent Office, private interests were not wholly silent. In 1855 the president of the Maryland State Agricultural Society, James T. Earle, moved by the same purpose that inspired Ellsworth, addressed a letter to agricultural societies of other states, saying, in part:

For the promotion of the farming interest of the country we are anxious to procure the earliest reliable information possible of the crops, that the same may be laid before the farmer to guide him in the selection of the best time to dispose of the fruits of his labors. This duty should properly be imposed upon an agricultural department of the general government; but in the absence of such provision, and in view of the artful practices of speculators and others, operating most disastrously through the base venality of the public press, upon this leading interest, the obligation is devolved upon us. . . .

We hope to be able to lay before you a statement of the wheat, grass, and oat crops of Maryland by the 1st of September, and of the corn crop by the 1st or middle of November. . . .

Let us have gentlemen of intelligence and reliable judgment in each county of our respective States . . . that we may have a right to call on statedly for information touching the crops of their different localities. They can be directed to forward their reports to some selected officer, whose duty it should be to collate them and disseminate the information thus deduced through the public press, and by circulars transmitted to each of the State agricultural societies of the Union.[19]

Earle's proposal did not get results in line with his expectations, but it seems to have had some beneficial influence. In his report for 1855, following Earle's letter, the Commissioner of Patents, Charles

[18] U. S. Commissioner of Patents, *Report,* 1849 (Washington, 1850), Part 2, pp. 14–15.
[19] U. S. Commissioner of Agriculture, *Report,* 1863 (Washington, 1863), p. 586.

Mason, indicated that he was conscious of the importance of annual crop production estimates issued in time to help stabilize the market. At that early date he saw the possibilities of decentralization of the work and co-operation with state agricultural agencies. He prepared a circular, dated Feb. 29, 1856, addressed to "the governors and other prominent individuals of the several States and Territories,"[20] calling for the quantity and value of the principal products of agriculture and some of the manufactured products made of agricultural raw materials.

Apparently Commissioner Mason's circular was not fully understood by those who received it. He said of the recipients:

> Many of them have supposed that the information obtained was to be communicated to this Office in its crude state, just as it was procured . . . whereas, the design is, that all the statistics of each State, as derived from the different local officers, should be fully digested and consolidated, so that nothing but general aggregates might be furnished to this Office.[21]

We have not found evidence that Mason made any further effort to provide annual estimates of production. It is clear from his report that he wanted to see annual statistics but had no intention of going to the trouble that Commissioner Ellsworth did to collect and compile them.

Unofficial Efforts of Orange Judd, 1862

The next significant move toward statistics of agricultural production throughout the Nation came in 1862 as the private venture of Orange Judd, Editor and Proprietor of the *American Agriculturist.* Judd issued the following call for cooperation under the title "An Important Enterprise — The Cooperation of all our Readers Asked."

> It is well known that in this country we have no public system of gathering from year to year, and at different times in the year, *the statistics* of the *condition and probable yield of our growing crops.* This work should be done by the General Government, but at present it is not, nor is it likely to be for a year or two at least. When, for example, the wheat harvest approaches, there is the utmost uncertainty, not only as to the relative *amount* sown, but also in regard to the *condition* of the growing crop. Shrewd speculators, who have on hand a large stock of old grain, often circulate newspaper reports to the effect that owing to bad weather, insects, small breadth, etc., there will not be half a crop gathered. On the other hand, as the harvest begins, another class intending to become grain buyers, are interested in magnifying the yield for the purpose of depressing prices. Thus, not only the producers, but many dealers themselves, are in a state of doubt and uncertainty. . . . This state of things we propose to try to remedy, to a small degree at least, if we can secure the aid and co-operation of our readers, in the following manner:
>
> 1. Let the readers of the *Agriculturist* in every town counsel together, and select some man who may be relied upon for good judgment, and general ability to estimate with some degree of accuracy in regard to the leading

[20] U. S. Commissioner of Patents, *Report,* 1855 (Washington, 1856), Part 2, pp. iii–v.
[21] *Report,* 1855 (Washington, 1856), Part 2, p. vii.

REPORT,..... 10, 1862*

State of ....., county of ....., township of ....., by ....., (at ....P. O.)

Weather for one month past, as compared with average for five years past.	Winter wheat			Spring wheat			Corn			Rye		Oats		Meadow		Potatoes		Fruit. Prospects at this date		Add any other crop largely grown in your section	
	Amount of surface sown, as compared with 1861.	Amount of surface sown, as compared with average for five years.	Appearance or prospects at this date.	Amount of surface sown, as compared with 1861.	Amount of surface sown, as compared with average for five years.	Appearance or prospects at this date.	Amount of surface planted, as compared with 1861.	Amount of surface planted, as compared with average for five years.	Appearance or prospects at this date.	Amount of surface sown, as compared with average for five years.	Appearance or prospects at this date.	Amount of surface sown, as compared with average for five years.	Appearance or prospects at this date.	Amount of surface, as compared with average for five years past.	Appearance or prospects at this date.	Amount of surface planted, as compared with average for five years.	Appearance or prospects at this date.	Apples	Peaches	Amount growing, as compared with average for five years past.	Prospects at this date.
A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	R	S	T	U	V	W	X
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
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* U. S. Commissioner of Agriculture, *Report*, 1863 (Washington, 1863), p. 588.

crops, wheat, corn, etc., (*a*), what is the amount of surface sown or planted, as compared with previous years; and (*b*), the *prospect* at any date. Wherever there is a Farmers' Club, let the Club choose the reporter. Let it be understood by him that he is desired to keep on the look-out, and be able to respond to all questions as to the prospect of the crops. Where any subscriber stands alone, and can get no one to cooperate with him, let him volunteer to act himself, and the very fact that his report is to go out to the country will lead him to be observant and make inquiries.

2. Let the name of such persons be forwarded to the Editor of the *Agriculturist* without delay.

3. To every such person we will send a sheet of *blank forms,* [see blank form on this page] to be filled up with a brief summary of the amount and condition of the leading crops of the different kinds. The blanks will be so arranged as to require very little writing in filling up, and therefore involve but little labor aside from that required to be well informed as to the condition of the crops.

4. One of these blanks to be filled up at given dates, say May 10, June 10, July 10, and August 10, and forwarded to this Office.

5. These reports will be published in tabular form in the *Agriculturist,* either in full or in a well digested summary.

It will be seen at a glance, that such a system of reports will be of immense value, not only to the country at large, but to every man who has produce to sell. Suppose that only five hundred or one thousand such reports should be gathered and published; yet, if they come from different parts of the country, it is evident that they will give at least an approximation to the average of the whole country. The reports should embrace a neighborhood, and not merely the reporter's own crops, for their condition may depend upon his own good or bad husbandry.

Such is the plan we propose. It will involve much labor and expense on our part, but we shall cheerfully undertake it, if our readers will so far co-operate as to present us with the names of reliable men upon whom we can call for the desired information.[22]

In filling out the accompanying blank, reporters were asked to use the number 10 *"as the* UNIT *or average for comparison,"* thus:

COLUMN *A* — 10 means that the weather for a month previous to the date of the report was about as good as the average for other years, that is for winter crops and for general farm operations. The state of the weather as it has affected the grass crop, is not taken into account. Figures above or below 10 indicate the comparative goodness or badness of the weather.

COLUMNS *B, E, H* — In these 10 indicates that the amount of surface growing is about the same as *last year.* Each figure (or unit) above 10 means a tenth more of surface, and each unit below 10, means one-tenth less. Thus, 5 means one-half of average surface, 15 means one and a half, 20 means double, and so on.

COLUMNS *C, F, I, L, N, P, S* — In these columns 10 means that the average surface sown or planted or growing is about the same as the average for five years past. Each unit above or below 10 stands for an increase or decrease of one-tenth in the surface.

COLUMNS *D, G, K, M, O, R, T, U, V* — In these columns 10 means that the *condition* and *prospect* on . . . [the 10th of the month] indicated an *average yield per acre.* Here also each unit above or below 10 indicates the prospect of a yield a tenth above or a tenth below the average. . . .[23]

Judd's appeal was issued in March, 1862, and a crop condition report as of May 10 was published in June. It was based upon the "opinions of nearly 1,000 farmers."[24] Four more reports were issued in 1862 showing conditions as of June 10, July 10, August 10, and September 10. The June and July reports were based upon information received in about 1,500 replies. For the report of September 10, "nearly a thousand careful, observing, practical, and reliable men, most of whom were selected to gather these reports from their peculiar fitness to aid in the enterprise, and their opinions and estimates are specially valuable."[25] The final report for the season, based upon reports as of September 10, contains the following paragraphs:

The average for the whole country for a month ending September 10th, is 9.8 (10 being the average for the same period during five years past). The average is lowered by drouths in some parts of Pennsylvania, Ohio, Illinois, etc., as indicated in the tables. In the northern tier of States, the weather reports are very favorable, averaging above 10.

WINTER WHEAT (*B*) — The gathered crop averages for the whole country 12½, that is, 25 per cent above last year. As compared with the average of five years past, the figures (under *C*) are 13.9, or 39 per cent higher. The best reports are from the great wheat States, Ohio, Indiana, Wisconsin, Michigan, etc. There can be no further doubt that, taking the whole

[22] "An Important Enterprise . . .," *American Agriculturist,* 21:72 (March, 1862).
[23] "Reports on Crops, May 10, 1862," *American Agriculturist,* 21:186 (June 1862).
[24] *American Agriculturist,* 21:168 (June 1862).
[25] *American Agriculturist,* 21:296 (October 1862).

country together, the aggregate yield of winter wheat this year exceeds that of *any* previous year.

SPRING WHEAT — The gathered crop, in the counties reported from, averages 28 per cent above last year, and 70 per cent above the average for five years past. But from the limited number of reports from localities where this crop is most grown, and from the small yield in those localities, we judge that the *total* yield for the whole country is below that of last year.

INDIAN CORN — The reports make the total area planted average about the same as last year, and 12 per cent above the annual average for five years past. The prospective yield per acre on Sept. 10th, was a trifle below the average, taking the whole country together. In the great corn-growing State of Illinois, the good corn weather (except in a few counties where it has been too dry) has brought forward the crop so well as to promise nearly an average yield per acre. Owing to drouth, the reports from Ohio and Pennsylvania average poorly. If frosts hold off late, in the northwestern States where the growth is very fine, the total crop of the country will be fully equal to last year, taking into account the larger area. Early frosts would, of course, reduce the yield. On the whole, the prospect is good for a large corn crop.[26]

U.S. Department of Agriculture, 1863

The Orange Judd experiment in monthly crop reporting covered that one year. As hoped by Judd, the United States Department of Agriculture took up this work in 1863 and has continued it.

Congressional action had provided for the establishment of a Federal Department of Agriculture and on July 1, 1862, Isaac Newton, who for more than a year had been superintendent of the agricultural division of the Patent Office,[27] was appointed Commissioner of Agriculture. The act establishing the United States Department of Agriculture stated:

> It shall be the duty of the Commissioner of Agriculture to acquire and preserve in his department all information concerning agriculture which he can obtain by means of books and correspondence, and by practical and scientific experiments, (accurate records of which experiments shall be kept in his office,) by the collection of statistics, and by any other appropriate means within his power."[28]

Isaac Newton responded to the mandate to collect agricultural statistics. His first report, covering the fiscal year ended June 30, 1863, included summaries of agricultural census data from the loyal states for the crop year 1859 and estimates of the crops for 1862. Those estimates were:

> . . . designed to show the *amount* of our principal crops; *their yield per acre; the acreage sown or planted; the average prices in each State;* and the *total value* of these crops in each of the loyal States, Kentucky and Oregon excepted, from which no sufficient returns had been received.[29]

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[26] *American Agriculturist,* 21:296 (October 1862).
[27] A. C. True, "A History of Agricultural Experimentation and Research in the United States, 1607–1925," U.S.D.A., *Miscellaneous Publication* 251 (Washington, 1937), pp. 34, 41.
[28] Act of May 15, 1862, *U. S. Statutes at Large,* 12:387; Rev. Stat., secs. 520, 521.
[29] U. S. Commissioner of Agriculture, *Report,* 1862 (Washington, 1863), p. 575.

They were based on census figures for 1859 adjusted on the basis of information received in answer to circulars, i.e., questionnaires, sent in the winter of 1862–63 "to every county in the loyal States, making inquiries relative to the prices of agricultural products in them and the average yield per acre of the leading crops."[30] In those questionnaires, asking for yearly figures, Isaac Newton adopted the form which Orange Judd had been trying out in his monthly reports in the summer of 1862. Newton's report for 1864 explained that "Nearly all the answers to questions asked of the correspondents relative to crops and farm stock are given in *tenths*."[31] The questionnaires "called for a comparison with the crop of 1859, as reported in bushels, pounds, or tons by the census of 1860, and, taking this as the *base*, the *amount* of the crop of 1862 was thus ascertained."[32]

Newton clearly indicated in his first report that he wanted to secure statistics which would answer such questions as, "At what expense to the farmer these crops are produced; at what cost to the soil; what are the errors of our agriculture, its difficulties, its hardships, its wrongs."[33]

In addition to annual statistics of crop production, acreage, yield, and price, monthly reports of the condition of crops were soon started. These were patterned after those initiated by Orange Judd in 1862.

The Office of Statistician, with an appropriation of $20,000, was created in 1863, and before the end of the new department's first fiscal year Lewis Bollman had been employed as statistician.[34] With this assistance, Newton's first *Monthly Report of the Condition of Crops* for May and June, 1863, was published under the date of July 10, 1863, with the statement that "Hereafter a similar report will be issued on the tenth day of every month."[35] The following excerpt states the purpose and describes the methods used in preparing the monthly crop condition reports:

> The Agricultural Department, in issuing its first monthly report of the condition of the crops, desires to make known its *purpose* in preparing these reports, and the *means* it has adopted to collect the information embraced in them. . . .
>
> . . . Those who produce, and those who consume, have interests as well as the purchaser who stands between them. A knowledge of the market is essential for all, and this market is governed by supply and demand.
>
> The relations between agriculture, manufactures, and commerce, demand that something should be done to obtain and publish, at brief intervals during the crop season, reliable information of the amount and condition of these crops. . . .
>
> Ignorance of the state of our crops invariably leads to speculation, in which oftentimes, the farmer does not obtain just prices, and by which the

[30] *Report*, 1862 (Washington, 1863), p. 574.
[31] U. S. Commissioner of Agriculture, *Report*, 1864 (Washington, 1865), p. 565.
[32] *Report*, 1864 (Washington, 1864), p. 565.
[33] U. S. Commissioner of Agriculture, *Report*, 1862 (Washington, 1863), p. 574.
[34] U. S. Commissioner of Agriculture, *Report*, 1875 (Washington, 1876), p. 17.
[35] U.S.D.A., *Monthly Report on the Condition of the Crops*, May and June 1863 (Washington, 1863), p. 1.

consumer is not benefited. The interests of labor, therefore, demand that the true condition of these crops should be made known. Such knowledge, whilst it tends to discourage speculation, gives to commerce a more uniform, and, consequently, a more healthy action. . . .

Holding these opinions, the Commissioner of Agriculture believed it was his duty to adopt some plan to obtain each month, during the months from May to October inclusive, general information of the amount and condition of our leading agricultural products. He was aware of the difficulties that surrounded an attempt of this kind. The department had no means, except in a copy of its annual report, these monthly reports, and seeds, to pay for answers to interrogatories necessary to procure information. It had but one reliance — the voluntary aid of intelligent farmers — a class to whom the government, in its utmost need, ever appealed to, and not in vain, for aid and protection.[36]

The plan that has been adopted is to issue a circular for each month, commencing with May, to end with October, and in it to make inquiries relative to those crops the condition of which is of most importance to be known. . . . In the subjoined tables it will be seen that the questions relate to but two matters, the amount sown in 1863 compared with that in 1862, and the appearance of the crop in May and June. The answers are given in figures, by adopting 10 as the representative of an average of the *amount* of acres sown; making each number below or above it represent *one-tenth* of a decrease or increase. So 10 represents also an average *appearance*. The figure 9 would be one-tenth below the average appearance, and 11 would be one-tenth above it.[37]

The table on page 182 is a sample of the way in which the condition reports were presented to the public:

In his report for 1863 Isaac Newton said:

It is impossible for isolated individuals to collect and arrange for practical use the vast stores of agricultural information and statistics which are being gathered by associated effort, and which are to stimulate and direct agricultural pursuits, as well as guide legislation.[38]

Also in that volume for 1863, Lewis Bollman, Statistician, presented to the Commissioner of Agriculture his "first annual report of the statistical division," from which we quote his statements regarding "the objects proposed to be accomplished by it."[39]

1. The collection of agricultural statistics showing the condition and amount of the crops at brief intervals, monthly or bi-monthly, as the interests of agriculture demand. . . .
2. The collection and arrangement of such statistical matter as exhibits the commerce, both foreign and domestic, in the leading agricultural products; that, having the tables always at hand, and understanding from them the influence of this commerce on prices, the farmer may intelligently direct his labor to the culture of such crops as the statistics indicate will be most in demand.
3. The collection of information on all subjects connected with the advance-

[36] Newton's statement, that the Department could pay for the services of farmers in rendering reports only by providing reciprocal information, practically amounted to a statement of policy which is still followed. Even though it was impelled by lack of funds, it disclosed his perception that paid reports might be less reliable than voluntary ones.

[37] U.S.D.A., *Monthly Report on the Condition of the Crops,* May and June 1863 (Washington, 1863), pp. 1–3.

[38] U. S. Commissioner of Agriculture, *Report,* 1863 (Washington, 1863), p. 15.

[39] *Report,* 1863 (Washington, 1863), p. 579.

MAY REPORT [1863]*
Condition of the Crops.

	Winter wheat		Spring wheat		Rye		Corn		Oats		Potatoes		Sorghum		Cotton	
	Average amount of land sown compared with 1862.	Appearance of crop at this date.	Average amount of land sown compared with 1862.	Appearance of crop at this date.	Average amount of land sown compared with 1862.	Appearance of crop at this date.	Average amount of land sown compared with 1862.	Appearance of crop at this date.	Average amount of land sown compared with 1862.	Appearance of crop at this date.	Average amount of land sown compared with 1862.	Appearance of crop at this date.	Average amount of land sown compared with 1862.	Appearance of crop at this date.	Average amount of land sown compared with 1862.	Appearance of crop at this date.
Connecticut	10	10	10	10	10	10	10	11	10	10	10	10	.....	.....	.....	.....
Delaware	9	9	8	9	11	11	12	9	12	8	12	9	8	12	15	12
Illinois	12	9	12	9	9	10	11	9	10	9	11	10	16	10	79	10
Indiana	10	11	10	10	10	10	10	10	9	10	11	10	15	10	20	10
Iowa	17	10	12	11	12	10	12	11	13	11	10	10	14	11	.....	.....
Kansas	18	12	6	11	15	11	10	11	10	10	12	12	13	10	83	10
Kentucky	9	11	.....	.....	9	9	8	10	8	9	9	10	15	10	27	12
Maine	.....	.....	11	10	10	10	9	10	9	10	11	10	.....	.....	.....	.....
Maryland	10	10	.....	.....	10	10	10	8	9	5	11	10	16	10	20	10
Massachusetts	10	9	11	10	11	10	10	9	9	10	10	10	.....	.....	.....	.....
Michigan	11	10	10	10	10	10	10	10	11	10	11	10	25	10	50	10
Minnesota	13	11	12	11	10	10	13	10	13	10	11	10	19	10	30	10
Missouri	12	11	10	8	11	11	11	10	9	8	10	10	11	10	15	10
New Hampshire	10	8	11	10	10	10	9	10	12	10	11	10	.....	.....	.....	.....
New Jersey	11	11	10	10	10	10	11	10	9	10	10	10	12	10	.....	.....
New York	11	10	10	10	10	9	10	10	11	10	11	10	11	11	.....	.....
Ohio	9	8	10	10	10	9	11	10	10	9	11	10	14	10	15	10
Pennsylvania	10	10	8	10	9	9	11	9	10	10	11	9	23	9	60	10
Rhode Island	10	10	10	10	10	10	10	10	9	10	10	10	.....	.....	.....	.....
Vermont	11	19	10	10	10	10	10	11	9	11	9	10	.....	.....	.....	.....
Wisconsin	12	10	12	11	11	10	11	10	12	11	11	10	28	10	.....	.....
Nebraska Terr.	15	8	11	8	8	10	8	10	10	8	10	10	9	11	.....	.....
General average	11	9⅓	10	10	10½	10	10⅓	9½	10.2	9½	11	10	15½	10¼	37	10½

* U. S. D. A., *Monthly Report on the Condition of the Crops*, May and June, 1863 (Washington, 1863).

ment of agriculture. This information is obtained through circulars issued to correspondents, in which inquiries are made as to the condition and amount of the various crops, and also of the causes of success or failure. . . .

4. In order to accomplish the foregoing objects it became indispensably necessary to publish a monthly report. . . .

Through these reports the condition and amount of the crops have been laid before the country quickly, that the grower of and the trader in agricultural products might base commerce on them by the law of supply and demand; and their influence has everywhere been acknowledged as beneficial to both, and not less so to the consumer.[40]

. . . To Mr. Judd belongs the credit of giving definite shape to a plan for the annual collection of the statistics of the crops, by which their amount could be approximated to sufficiently near for all practical purposes. His plan is virtually the same as the Prussian, and it is the one adopted by this department. The details, however, have been much changed by it, and made applicable to almost every matter belonging to agricultural production.

Every month during the summer, and bi-monthly during the winter, the department issued circulars to its correspondents. . . .

The number of such correspondents should not exceed *one* for an ordinary sized county of 400 square miles, or twenty miles square, and about five assistants. . . .

[40] *Report*, 1863 (Washington, 1863), pp. 579–80.

On a day named in the circular their returns are sent to the department by the mail, and as fast as received they are entered on rolls for each State, and when all are entered, the returns are added up and the product divided by the number of counties returned for each crop. This gives the general average for each State in *tenths* and *fractions of a tenth.*

The next step is to calculate from these averages the product of a crop in bushels or pounds, . . .[41]

Bollman continued monthly and annual crop reports along the same lines until he left the Department early in 1866.

Jacob R. Dodge, Statistician, 1866-1893

Jacob Richards Dodge was appointed statistician on May 6, 1866, and was truly a wheel horse in the building of the United States Department of Agriculture. He had been with the Department since July 17, 1862. From 1866 to 1878 Dodge was both statistician and editor. For 26 years Dodge served the government as a statistician, 24 years of which he was statistician of the United States Department of Agriculture.[42]

In his first report, that for the calendar year 1865, which he compiled from data gathered by his predecessor, he made an interesting observation by way of interpreting the wide variation in the average value of crops per acre in different states:

It will excite surprise in the superficial observer, but not in the thinking mind, that "sterile New England" should show so large a value of products per acre. This value results primarily from the markets created by manufactures, which also furnish the means and the inducements to artificial fertilization, and an encouragement to a greater expenditure of labor. . . .

The cost of transportation is in part the cause of the following receding scale of values, from east to west:

[Average Value of Crops per Acre]

States	*Value of corn*	*Value of wheat*
Vermont	$48.80	$29.03
New Jersey	37.30	28.25
Maryland	24.19	21.73
Ohio	20.20	16.25
Indiana	17.96	16.30
Illinois	14.47	14.36
Iowa	19.59	12.85

These tables teach, not only the value of *home markets,* but show how excessive charges for transportation are eating out the substance of the west, reducing home prices and farmers' profits, and consigning corn to the grate or furnace. It should teach the west to diversify its industry, and divert

[41] *Report,* 1863 (Washington, 1863), p. 589.
[42] C. R. Barnett, *Dictionary of American Biography* (New York: Charles Scribner's Sons, 1930), 5:349–50.

labor from wheat-growing to industries which make light products. It should teach the west to consume its own wheat and corn, as far as possible . . .[43]

Further evidence that Dodge thought in terms of economic forces in action is found in his report for 1866:

> The advantages of a great variety in industry are manifold, one of the highest of which is the fact that all classes and capacities, young and old, male and female, are furnished with something to do, and with a motive for doing it, and thus labor in some form becomes the rule, to which there are few exceptions. Consumers and producers are at each other's doors, or commingled in the same household, and carriers and go-betweens absorb but a small portion of the profits of industry. There is no glut of the markets from excess of production or the deficiency or great expense of transportation. There is no occasion to sell corn for ten cents per bushel, or eggs at six cents per dozen, or cattle, as in Texas, at five dollars per head. . . .
>
> The rate of wages in the several States differs just in proportion to the multiplication of separate industries, . . .[44]

Thus Dodge gave the economic reasons for the development of manufacturing industries in the West and in the South as early as 1867.

Year after year the statistical work followed the lines indicated above. Regarding those statistics ideas were expressed which are a part of the history of economic thought. A frame of mind, if not a fact of the time, is indicated by Dodge in the following opening remarks of his report for 1867:

> In my report upon the facts of agriculture for 1866 there appeared, amid much that was prosperous and cheering, a few circumstances that were discouraging and unpropitious. . . . in the south it was as yet uncertain who would work and who would play, and cotton suffered from years of neglected culture, and was worked at too great expense for labor and supplies. There were everywhere too many consumers and too few producers. Young and old, black and white, flocked to the cities, all hoping to obtain large returns from little effort, and the natural result was an increase in prices of meats, breadstuffs, fruits, and vegetables, which were still more enhanced by speculators, hucksters, and the whole race of middlemen, in their effort to obtain more for selling than farmers were allowed for producing the prime essentials of subsistence.[45]

In addition to the regular statistical work, a special survey was made in 1867 of southern agriculture by sending out a special circular of inquiry regarding acreages of crops, methods of culture, prices and wages.[46] That Dodge was beginning to think more about statistical method than he had during the first years when he was simply carrying out the work as organized by Bollman is shown in the following passage from his report for 1868:

> The extent and constantly changing condition of our vast territory render attempts at detailed estimates of production somewhat hazardous; yet,

[43] U. S. Commissioner of Agriculture, *Report,* 1865 (Washington, 1866), p. 62.
[44] U. S. Commissioner of Agriculture, *Report,* 1866 (Washington, 1867), pp. 82–83.
[45] U. S. Commissioner of Agriculture, *Report,* 1867, p. 77.
[46] *Report,* 1867, pp. 412–28.

so far as opportunity has been afforded for verification, the results have been quite satisfactory. As to the new and rapidly growing settlements of the West which were scarcely commenced at the date of the last census, it is simply impossible to attain a high degree of accuracy without a careful census annually.[47]

In 1869 Dodge complained that the census, on which crop estimates were based, did not include statistics of acreages planted to the various crops, and went on to say that in his division:

A systematic effort has been made to *estimate* the acreage by a careful and deliberate calculation in each county, and the proper averaging of the local estimates. The ultimate results are verified and modified by another mode of reaching a similar result, by dividing the aggregate quantities, as found by yearly comparisons based on the results of the decennial census, by the estimated average rate of production per acre.[48]

The 1870 monthly reports were the last in which the number 10, introduced by Orange Judd, was used as a base in estimating acreages, condition, and yield of crops. Commencing with 1871, the number 100 was used as base, and the increase or decrease in acreage and yield as well as condition of crops in a given month was expressed in percentages above or below 100.[49]

That Dodge's ideas of developing the statistical service were expanding is indicated by the following statement in his report for the year 1872:

The statistical field to be explored extends through the length and breadth of this country, in all its varied and constantly widening range of rural industries; and frequent incursions into foreign fields are necessary for the introduction of new ideas in production and its processes, and for a knowledge of deficiencies in foreign production and their supply from our own surplus, so far as it can be accomplished with profit to ourselves. . . . It is important to know, early and accurately, the facts of foreign harvests, that any extraordinary deficiency in breadstuffs may be supplied from our abundance, not only as a means of profit, but from considerations of humanity and international comity. . . . It is the province of statistics to present facts, from home and foreign sources, to show the relations of supply and demand and the cost and profit of various branches of production. . . .[50]

In 1873 Dodge spent a few months in Europe:[51]

. . . for the purpose of investigating more thoroughly the statistical methods of the principal governments, of making arrangements for valuable exchanges, and of obtaining a nearer and clearer view of the facts of European agriculture, especially such as may be applicable to the conditions

[47] U. S. Commissioner of Agriculture, *Report*, 1868, p. 16.
[48] U. S. Commissioner of Agriculture, *Report*, 1869, p. 20.
[49] See U.S.D.A., *Monthly Report on the Condition of the Crops*, November and December 1870, p. 465, which show the condition of crops in tenths, and May and June 1871, p. 186, which show the condition on the basis of 100.
[50] U. S. Commissioner of Agriculture, *Report*, 1872 (Washington, 1873), p. 9.
[51] The *Dictionary of American Biography* (New York: Charles Scribner's Sons, 1930), 5:349, states: "In 1873 he [J. R. Dodge] spent the summer in Europe, under a commission from the Department of Agriculture for investigating the statistical methods of European countries, and as one of the commissioners to the Vienna World's Exposition by appointment from the State Department."

affecting rural advancement in this country. The government offices of London, Paris, Berlin, and Vienna were visited.[52]

The influence of that trip to Europe was manifest in Dodge's later work. More and more his reports were concerned with ways and means of improving and expanding the work of his division in the United States Department of Agriculture. Stimulus received from his European trip was indicated in his report for 1874:

> Exact statements of production are probably impossible in nine cases out of ten; indeed, books are not systematically kept by one farmer in a hundred. The United States census of agricultural production is founded upon estimates which are made from recollection of the crops of the previous year. The only advantage possessed by these over other estimates is that they individually cover smaller areas, and are made by persons most familiar with those areas; the principal disadvantage, the fact that the ignorant, and those fearful that the truth may increase taxation, are represented in these estimates equally with the intelligent and reliable.
>
> What is then an essential prerequisite to accuracy and completeness of agricultural statistics? Manifestly, the education of all farmers as to the importance and individual economy of a precise and accurate knowledge of quantities grown, prices paid, rate of wages for labor, and other essential facts in every section of the country. The fountain-head of this information is at the farm; and ignorance, indifference, or opposition on the part of the farmer will vitiate the reliability and depreciate the value of all such information. . . .
>
> Unfortunately, the United States marshal has been employed in gathering data for the national census, and the assessor, the precursor of taxation, has generally been charged with such duty in the annual censuses of the few States that pretend to collect agricultural statistics. It is impossible to obtain the full truth in the face of this fear of taxation. . . .
>
> Were State laws for collecting annually these statistics wisely enacted and rigorously enforced, farmers would gradually acquire appreciation of the importance of statistics, and their experience would lead to more careful record and subsequent report. Such a system would furnish a most important adjunct to that of the Statistical Division of the Department of Agriculture.[53]

Joseph A. Becker, in personal conversation, commented that Dodge's criticism of collecting statistics by the use of police officers and assessors is in keeping with general experience with initial attempts to conduct agricultural enumerations. That "farmers would gradually acquire appreciation of the importance of statistics, and their experience would lead to more careful record and subsequent report" is borne out by experience. Actually, experience with successive enumerations works also in the direction of more complete returns and the elimination of understatement and other forms of bias. This is borne out by the splendid record of assessors' enumerations of crop acreages in most of the midwestern states and by similarly successful enumerations by rural police in Ireland and other European countries.

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[52] U.S. Commissioner of Agriculture, *Report*, 1873 (Washington, 1874), p. 15.
[53] U.S. Commissioner of Agriculture, *Report*, 1874, pp. 15–16.

Dodge's report of 1874 continued:

The adoption of some uniform plan for the collection of agricultural statistics by the governments of the civilized world is an imperative requirement of the age. The differences in weights and measures, in kind and comparative quantity of production, and in many other prominent points, are sufficient hinderances to uniformity and promptness in these statistical exchanges. The telegraph is destroying isolation, and education is overthrowing the barrier interposed by the confusion of tongues; and if there could be an agreement upon a few essential points, such as the area occupied in specific production, quantity and value of product, the numbers and value of the animals of the farm, and the current crop-prospects of each season in advance of maturity and harvest, great advantage would result to the producers, exchangers, and consumers of the world. . . .

During the summer of 1873, at Vienna, Austria, there assembled the first international congress of agriculture and forestry. . . .

The congress expressed the conviction that agricultural and forest exploitation, as now developed, cannot give statistical data sufficiently exact for comparison upon its actual condition and progress in different countries. The efforts of international statistical administration hitherto have been insufficient to meet this necessity, which can only be met by researches of specialists in the matter, and upon the basis of common agreement between governments. . . .

For this reason the congress prayed the Austrian government to take the initiative steps to secure such an agreement between governments, and to expedite the organization of a system of agricultural and forest statistics. It is recommended that a census be taken every ten years, in all countries at the same time that the census of population is taken. . . .

This movement should result in publications showing clear and precise statements capable of comparison upon —

1. The market-prices of agricultural and forest products as well as the exchange to which they give rise. These statements should be as prompt as possible, and as often as once a week in times of special interest.
2. The annual yield of crops in percentages of an average yield, for the earlier crops in September and for the later ones before the end of November. These should be given in absolute figures by districts, and in totality as soon as possible after the period of production.
3. The prices of transportation by quantity and distance, by rail or other roads, or by water; the wages of laborers; interest on money; voluntary or involuntary mutations of property; the purchase-price and insurance of goods, etc. These statements should be made as far as possible from official data or other reliable information, and should be made annually.[54]

In that report Dodge was calling for the kind of service that was finally provided for in the international convention of 1905 which created the International Institute of Agriculture in Rome, Italy.

In his report for 1875, Dodge described the functions of the Division of Statistics as follows:

The function of the division of statistics is the collection of the current facts of agriculture in the United States and the compilation of such foreign statistics as may serve, by comparison and suggestion, to advance the interests of rural economy in this country. It involves an organization of a corps of

[54] *Report,* 1874, pp. 20–21.

reporters, consisting of a chief and three assistants in each county, charged with the duty of responding monthly to systematic inquiries concerning the condition of growing crops, the area planted, rate of ultimate yield, the prevailing home-prices of products, the condition and comparative numbers of farm-animals, and other points of general interest. . . .

These reporters are selected for their known intelligence and judgment, and the aid of agricultural societies, or, in their absence, of the Representative in Congress, is invoked in their selection, if suitable persons are not known to the officers of the Department. They are selected with reference to *fitness,* and their political views are usually unknown. . . .

The translation and utilization of foreign statistical matter, and the preparation of original statistics for foreign exchange, are important features of the regular work of this division. The official statistics of States, of boards of trade, of railroads, of industrial associations, and all attainable data tending to illustrate production, distribution, and manufacture, are made available, so far as clerical facilities permit.

The furnishing of statistical statements for committees and members of Congress, boards of trade, and agricultural editors and authors, increases materially the work of the division. . . .

More than nine-tenths of all this service is gratuitous. None of the ordinary work of the correspondent, who is often a farmer with a national reputation as a rural economist and man of broad views and general culture, is paid for. . . .[55]

In 1876 Dodge indulged again in a little economic sermon which may have been intended for farmers who disliked full reports of large crops lest they depress prices. He neatly began:

The intelligent farmer is beginning to learn that misrepresentation of crop prospects, in the interest of higher prices, meets with but temporary and partial success, followed by revulsion and disaster. As water finds its level, so prices naturally tend to the equilibrium found under the law of supply and demand, which acts as inevitably as the law of gravitation. If a high price is obtained for a time, under a false impression of scarcity, the producer inevitably pays the penalty in prices running to the other extreme, whenever a surplus is accumulated in the hands of the purchaser for consumption. The buyer, with better means of information and a longer purse, oftener defrauds the isolated and needy producer of a portion of the legitimate results of his labor. The truth in its plainest garb subserves best the true interests of consumer and producer, though not the pecuniary advantage of the sharks who would thrive by the plunder of honest labor, making more in an hour than the producer receives for a year's work and investment.

It is conceded that the Government has an interest and a stake in the enlightenment of laborers, agricultural and mechanical, the makers of the wealth and conservers of the prosperity of the country, for their guidance in production in kind and quantity required and for their protection against the pirates of trade. . . .[56]

Other evidence that Dodge thought of his work as agricultural economics and not simply as the mechanics of gathering statistics is found in the following excerpt from his next report where he undertook to combat the popular view that the price of products, of which

[55] U. S. Commissioner of Agriculture, *Report,* 1875 (Washington, 1876), pp. 17–18.
[56] U. S. Commissioner of Agriculture, *Report,* 1876, p. 87.

we produce an exportable surplus, is determined on the foreign market:

> It is assumed by some political economists that the foreign value of an exported product fixes its price for home consumption. This is not true of corn, or anything else, except as exportation affects the equilibrium of supply and demand. In this case the exportation of from three to five per cent of the crop is too small an element in demand to affect very sensibly the price. The foreign need of our live beeves, fresh beef and mutton, salt beef and pork, lard, cheese, and butter, is exercising a much greater effect in appreciating price. As the element of foreign demand is of minor importance, the home price is also in exact [inverse] proportion to quantity produced, due allowance being made for scarcity or abundance of other feeding material which may be in part a substitute for corn, and for fluctuations in general values or other extraneous cause of differences. . . .[57]

In 1878 Dodge resigned his post in the United States Department of Agriculture, worked for the United States Treasury for a short time, then became statistician in charge of the census of agriculture of 1880 under the direction of Francis A. Walker. But in 1881 Dodge was reappointed statistician of the United States Department of Agriculture, although he did not resume work as department editor. In the meantime, Charles Worthington had served as statistician of the United States Department of Agriculture and had continued the work with the organization which Bollman and Dodge had developed. During Worthington's period of service an effort was made to obtain figures on the value of farm land.

When Dodge again took up the statistical work of the United States Department of Agriculture in 1881, he brought not only a broader experience but also a new supply of statistical data which he had garnered while he was in charge of the census of agriculture. Most important of these facts, from the standpoint of crop estimates, were the crop acreage statistics secured by the census for the first time in 1880. In speaking of the census material Dodge said:

> The publication of results of the Tenth Census, . . . opens a mine of information, not only concerning products made in a given year, and (for the first time) the area on which these products were grown, but also in relation to the composition of local soils, the influence of climate on production, the distribution of the various crops under cultivation. . . .[58]

Furthermore, Dodge came back with a larger vision, renewed enthusiasm and optimism, and new resolutions for his work, as is clearly shown in the following quotations from his reports:

> The people have become familiar with the plan, the ignorant are forgetting their prejudices against the assumed impertinence of statistical inquiries, and the work is becoming so popular that newspaper and commercial firms are vieing with each other in the volume and variety of their crop reports. . . .
>
> Believing that the unadorned truth will best promote the interests of producer and consumer, it will be my endeavor to eliminate bias and prejudice

[57] U. S. Commissioner of Agriculture, *Report*, 1877, p. 150.
[58] U. S. Commissioner of Agriculture, *Report*, 1883 (Washington, 1883), p. 251.

from returns and from the work of interpreting and averaging these local estimates. The fact that speculation, gambling in food products of the people, is alert in issuing false and exaggerated reports of crop production, and successful in securing their publication under circumstances tending to gain for them public credence, renders necessary the most prompt and accurate official information of the condition and ultimate yield of all our staple crops.[59]

To this end the Commissioner of Agriculture has obtained an increased appropriation from Congress; and among the means adopted for improvement of this service is *the appointment of a statistical agent for each State and Territory, to act as head of a State corps of correspondents,* as a lieutenant of the statistician in directing and executing the work of such district. . . .

This improvement in our statistical machinery has been put in operation, and valuable results have already been secured in different directions. It is realized, however, that whatever zeal and discretion may plan and direct, there must be intelligent and permanent local correspondents — resident farmers rather than peripatetic salesmen; established land-holders, instead of transient tradesmen — otherwise the presentation of approximately accurate results will be an impossibility and an absurdity. It is believed that with the judicious assistance of these agents an efficient organization of the machinery for statistical collection may be perfected and steadily maintained, with increasing competency and higher success.[60]

That feeling of exaltation was further evidenced in his next report in which he asserted:

With increase of facilities the work has taken a broader scope; with a higher popular appreciation of the uses of statistics, it is less difficult to obtain accurate information, and with increasing experience in the collection and co-ordination of essential facts, more reliable and suggestive results are obtained. It is gratifying to be able to report positive progress towards higher accuracy and utility in the collection and presentation of the agricultural statistics of the country. . . .

Commercial organizations are acquiring statistical experience, and aiding in tracing the shipment and destination of surplus products. Their record of prices, compared with values on the farm, affords the means of determining the cost of handling and moving crops.

The spirit of statistical inquiry is abroad in the land. Publicists and statesmen are becoming imbued with it, newspapers have caught the inspiration, and pleas and sermons find forceful illustration through its influence.

These are all evidences of a higher popular appreciation of the uses and utilities of statistics, and at the same time assurances of a farther reach and superior accuracy in the work. . . .[61]

The state statistical agents, mentioned by Dodge, were part-time paid employees of the United States Department of Agriculture.

They were required to organize investigations parallel with those of the original corps reporting to the Department. As far as possible the heads of the State statistical system were selected for this work, that national and local effort should be on the same line, and that any discrepancies appearing might be harmonized and verified. The State agent, as an assistant to the Statistician, could examine in detail the local peculiarities which explain the changes

[59] U. S. Commissioner of Agriculture, *Report,* 1881 and 1882, p. 577.
[60] *Report,* 1881 and 1882, pp. 666–67.
[61] U. S. Commissioner of Agriculture, *Report,* 1883 (Washington, 1883), p. 251.

of area or product that constantly occur, and give greater thoroughness and accuracy to the published reports.[62]

That system was continued until 1914 when full-time state statisticians were provided for each state, with the exception of a few small states which were covered by the statisticians of adjoining larger states.[63]

With continued experience Dodge became more and more of a technical statistician. Whereas his earlier reports gave little consideration to statistical method, from 1883 on he gave more and more attention to methodology. In his report for 1884 he explained:

> There are a few points essential to the value of a crop report:
>
> 1. Its estimates must have a common measure of value, meaning the same to every reader, and susceptible of tabulation with similar statements.
> 2. They must each cover a definite territory. . . .
>
> In the Department system, reports are made by counties, making it possible to perfect an average. . . .
>
> . . . The standard of comparison, 100, in reports of condition of growing crops, means that the plants occupy the ground fully, exhibiting a complete "stand"; that they appear in full healthfulness, uninjured by disease or insects; and that they have a medium growth for the date at which the report is made. . . .
>
> It will readily be seen that "condition" cannot be expressed in bushels or pounds. . . .
>
> . . . 100 means a *full* crop, not an *average* one.[64]

That this explanation with regard to the meaning of 100 was inadequate, although this base had been used in the monthly reports since 1871, is indicated by the further explanations made as follows two years later:

> Inquiry is often made, by persons who have given little attention to crop reporting, as to the basis or unit of percentage returns. It is simply the application of the decimal system used in the United States as the measure of money, and in France in the metric system, to the accurate expression of crop estimates. In comparisons of area with that of the previous crop, 100 represents the acreage of the previous year. In product, the present may be compared with that of the previous year, or with an average yield, 100 being the basis in each case. In reports of "condition" of growing crops, 100 is the standard of full condition, representing perfect healthfulness, exemption from injury from insects or drought or other cause, with average growth and development. Condition of a crop can never go above 100, except from one cause, unusual or extraordinary development and vigor of plant which more than counterbalances any deficiency in the stand or other loss. . . .
>
> Some have suggested a report in bushels, tons, bales, etc. Aside from the incongruity of reporting results of the harvest, when only condition of an immature crop is intended, it would be impracticable. . . .[65]

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[62] U. S. Commissioner of Agriculture, *Report,* 1884 (Washington, 1884), pp. 419–20.

[63] U.S.D.A., *Annual Reports*: Report of the Secretary. Reports of Chiefs. 1915 (Washington, 1916), p. 275.

[64] U. S. Commissioner of Agriculture, *Report,* 1884 (Washington, 1884), pp. 420–21.

[65] U. S. Commissioner of Agriculture, *Report,* 1886 (Washington, 1887), pp. 361–62. Within a quarter of a century, however, this "impracticable" task was undertaken. See *infra,* pp. 228–29.

But while Dodge was giving more and more attention to statistical method, he did not cease to present his views on the economics of agriculture. These sometimes related to prices and the middleman and sometimes to what farmers should produce. In the report for 1884 he had commented:

There is a want of harmony in the distribution of crops, which a higher culture, with time and experience, will cure. There is too much area devoted to some crops, too small a rate of yield upon that area, and too little breadth to other crops. Were it the result of climatic difficulties or other natural hindrances, it might not be wise to seek to change these crop relations. But with a continent for industrial exploitation — almost a world in itself — it is rank stupidity to assume that the necessities of a great people in consumption of all products grown in temperate climates cannot be supplied from the resources of home soil and labor.

Our production in certain directions has been excessive. . . . The area in wheat is now 39,475,000 acres, and 12,000,000 acres are cultivated in excess of the wants of the country, the produce of which must be sold abroad, mainly in Liverpool, in competition with the grain of Russia, of South America, of Australia, and of India. It is sent 1,500 miles by land and 3,500 miles by sea, and from California more than half round the world, to compete with the half-civilized fellahs of Egypt and the slavish ryots of India. It is a competition unworthy of American freemen, and utterly unnecessary, being caused by bad calculation in the distribution of crop areas, for while we export one-third of the wheat production, we import one-seventh of all the barley consumption, and $100,000,000 worth of sugar at foreign valuation, which brings $150,000,000 in our local markets in addition to the costs and profits of refining here. . . .

The facts of industry and wealth in history of nations show that general thrift and national wealth do not depend on numbers, but upon a wise distribution of productive forces. *Labor that is inharmonious and unequal in its distribution among the industries is unremunerative.* (Authors' italics.)

If nearly all workers are in agriculture, there may be abundance of food, and but few other comforts or appliances of civilization, and little money to procure any. Agricultural nations are proverbially poor. . . .[66]

"Year by year," said Dodge in speaking of the work of his division, "this work is more extensive and more influential, and more useful as a guide to the farmer in distribution of crop areas and in the marketing of his products."[67] He continued:

The foreign work, under the direction of Mr. Edmund J. Moffat, the agent in charge, who is also deputy consul-general at London, has been progressing satisfactorily, and the object aimed at, an early knowledge of the production and commercial distribution of those products most affected by American competition, has been measurably attained.[68] There are great

[66] U. S. Commissioner of Agriculture, *Report,* 1884, (Washington, 1884), pp. 505–06.

[67] U. S. Commissioner of Agriculture, *Report,* 1885 (Washington, 1885), p. 345.

[68] Foreign corp conditions and statistics were early recognized as of economic importance to farmers in the United States. The *Monthly Report,* begun in May 1863, under Commissioner Isaac Newton, gave occasional reports on foreign crops. The appropriation act for the United States Department of Agriculture, approved Jan. 20, 1883 (*U. S. Statutes at Large,* 22:408) for the fiscal year ending June 30, 1884, provided funds for "collecting domestic and foreign agricultural statistics." Beginning in October 1883, the Division of Statistics reported fully on foreign crop conditions in their monthly *Statistical Reports.* From that time forward foreign agricultural statistics have been collected and disseminated by the United States Department of Agriculture. The Fiftieth Congress, in an act entitled "An act to promote agriculture, and for other purposes," approved June 18, 1888 (*U. S. Statutes at Large,* 25:186), provided that United States consular officers should report monthly to the Department of State for the

difficulties, however, in this statistical field, from the want of unity in official statistical methods of different countries, the imperfection of results, and tardiness of completion and publication of reports.

In recognition of the great importance of administrative improvement in these respects, an organization of the International Statistical Institute was effected. . . .[69]

In that same report Dodge described the main objectives of the International Statistical Institute, organized in 1885 at the jubilee meeting of the London Statistical Society.

Commissioner Norman J. Colman would seem to have been envisioning the possibilities rather than the effective contribution of the Division of Statistics of his day when he said, in 1887:

> The application of statistics to business furnishes the balance-wheel which regulates its operations. It is the guide of the legislator, the counselor of the merchant, and the friend of the farmer. It suggests what to plant for profit and how much will fill the demand; it detects the erroneous practice and points out the more profitable method. Its uses in this division are in the interest of accuracy and truth, the improvement of American agriculture, cheaper production, and more economy in distribution.[70]

Many of these phrases could have been no more than an aspiration at that date, but they were of value as things to hold in mind that should be accomplished. They foreshadowed farm management work actually started by the Bureau of Statistics in 1902 in co-operation with the University of Minnesota, also work started about the same time by W. J. Spillman in the Bureau of Plant Industry, and marketing work started in the Division of Statistics and later developed in the Bureau of Markets and the Bureau of Agricultural Economics.

The alertness of the United States Department of Agriculture on matters relating to agricultural statistics is evidenced by the fact that "Mr. J. R. Dodge, a member of the International Statistical Institute, was designated as the representative of the Department . . . at the first biennial meeting of the institute, which convened in Rome, Italy, on the 12th of April, 1887."[71] One of the functions of the institute was "to secure greater uniformity in the schedules for statistical returns of different countries, to unify international methods in statistics, and to render comparable statistical results of different countries."[72] In reporting on the meeting of the International Statistical Institute, Dodge presented the constitution which was adopted and which may be looked upon as a precursor of the Inter-

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use of the Agricultural Department upon the condition of agriculture, prospective crops, and kindred subjects, each for his consular district; and the Commissioner of Agriculture was "required and directed to embody the information thus obtained, or so much thereof as he may deem material and important; in his monthly bulletin of crop reports."

[69] *Report,* 1885, pp. 345–46.

[70] U. S. Commissioner of Agriculture, *Report,* 1887, p. 21.

[71] *Report,* 1887, p. 24.

[72] *Report,* 1887, p. 24.

national Institute of Agriculture,[73] and then noted what seemed to him to be the outstanding considerations of the meeting:

> In the committee on prices one session was devoted to the consideration of the best means of procuring and presenting records of mean prices of the products of agriculture, industry, and transportation, to serve as a base to measure the variations of price at different periods and the divergency of price in different countries.
>
> The committee on landed property canvassed the best means of preparing comparative statements relative to the division of lands and upon the extent of agricultural holdings in different countries, showing the status of cultivators, whether proprietors, tenant farmers, or share-renters. . . .
>
> The committee on labor gave an entire morning to the consideration of means of procuring comparative data of the statistics of labor of different countries. . . .
>
> The census committee held a long session in consideration of the differences existing in publications relative to census enumerations, and the means of rendering their facts more readily comparable. Another committee devoted considerable time to discussion as to the possibility and the means of rendering more comparable the results of official statistics of foreign commerce of different nations. Still another investigated the means of preparing for each country a catalogue of publications, official and other, containing exact statements for each of the principal branches of statistics. . . .[74]

His attendance at the meeting in Rome seems to have impressed Dodge with the importance of expanding the work of his division. He wrote, after his return:

> The statistics of this country do not now suffice to meet the wants of legislators and business men. They want the statistics of the world. There are few products edible or textile, which enter into consumption to any appreciable extent which are not grown or possible of growth within the national domain, and in many a surplus is produced which may enter into competition with similar products of other continents; hence the knowledge of foreign crop results, deficiencies in supply, and current prices, is eagerly sought by farmers, commercial men, and statesmen.[75]

The next year Dodge summarized the status of the crop estimating work of the United States Department of Agriculture in the following terms:

> The crop-reporting branch of the service, which includes a corps of county correspondents and their assistants, State agents and their assistants, and a foreign agent connected with our consular system, has somewhat extended its territory and enlarged its work. The county correspondents now number 2,331, their assistants are fully three times as many, and the State agencies have a large list of correspondents. Altogether over twelve thousand persons are connected with the work of statistical investigation. The State agencies are relied upon for duplication of the principal work of the county correspondents, for comparison and verification, and neither result is authoritative as against the other, but any discrepancies are adjusted with reference to consistency and probability. The State system, though useful and necessary, especially for local and special investigation, has as many separate heads as there are States, possessing different degrees of efficiency and value in expe-

[73] Cf. pp. 254–57.
[74] U. S. Commissioner of Agriculture, *Report,* 1887, p. 594.
[75] *Report,* 1887, p. 523.

rience, and therefore lacks unity and equality in accuracy. The Statistician consequently finds the regular corps of reporters an invaluable resource as a balance-wheel. It is found that the agents of greatest skill and experience agree more closely with our direct returns than do those of less experience. Even if there were but one system of returns, that of State agents and their correspondents, their work would be so various in mode and result as to be unequal and chaotic, without the direction, revision, and control of one central head. . . .[76]

The defect mentioned by Dodge in the above quotation was, of course, removed through the control of "one central head," but it took time to evolve the decentralized system now in use with unification through leadership provided by the federal government. During the next 40 years the work of the state agents was gradually perfected to the point of taking over all of the primary work of gathering and tabulating the basic data used in Washington in making crop estimates. This is mentioned here in order that the reader may the more closely note the stages of evolution through which the organization passed in overcoming the weakness of the system of state agents noted by Dodge.

In calculating the production in a given state, straight averages from the various counties had been computed. In his report for 1888 Dodge once again discussed statistical method and made the first mention we have noted in the reports of the United States Department of Agriculture of the importance of weighting the averages:

The effect of differences in crop areas covered by reports, upon the averages of a state, is so great as to render valueless a "straight average," or the average of the amateur. This is found by adding the percentage column and dividing by the number of returns. The true average is found by giving to each return its proper weight or relative standing in production of the crop under consideration. The following statement, supposed to be the return of condition of corn in five Illinois counties, will clearly illustrate the two averages and their differences:

County	*Percentage of condition*	*Normal crop*	*Crop modified by condition*
		Bushels	*Bushels*
McLean	98	11,976,581	11,737,049
Alexander	65	454,705	305,558
La Salle	100	11,148,779	11,148,779
Hardin	70	306,960	214,872
Massac	67	450,010	301,507
Total	400	24,337,035	23,707,765
Average of condition	80	.....	97.4

[76] U. S. Commissioner of Agriculture, *Report,* 1888, (Washington, 1889), p. 405.

This extended or true average is thus worked out for each question and each State for every county reported. . . .[77]

From the very beginning mention had been made of the importance of figures for the annual production of various crops as a guide to farmers in deciding what, and how many acres of a given crop, to plant. With the oncoming of the agricultural depression, which reached bottom in the middle 1890's, Dodge felt the importance of making the Division of Statistics provide the fact basis for readjustments in agricultural production of the United States. He saw the advantage of introducing new crops and of withdrawing land and labor from the production of unmanageable surpluses of staples that were depressing prices. In his report for 1889 Dodge said:

> . . . the tendency to overproduction of staples, from a large annual increase of farm laborers and improved cultivation, requires the fullest and promptest information concerning new fruits, fibers, or products of economic plants, for which a profitable place may be found in some soil at some elevation between the frozen and the torrid zones of the continental areas of the United States. The importation of the products of agriculture and industry which could be produced by domestic labor now only partially employed is a prominent cause of the agricultural depression of which there is so much complaint in the more exclusively agricultural districts of the country, and a remedy must come from practical appreciation of the statistics which show where new values can be created by labor and old drains of national wealth to foreign lands may be closed up. . . .
>
> . . . the vital want of today is a clear and searching glance into the future, a forecast of crop results which shall fairly indicate them in advance. This must be a matter of estimate, the truth and utility of which depends on thorough observation and reliable judgment in the reporter, and critical acumen and mathematical skill in the consolidation.[78]

Dodge was continually thinking in terms of economic forces and, as a rule, with clearness and without prejudice. But in his phrase, "old drains of national wealth to foreign lands may be closed up," he obviously overlooked the fact that these were the drains through which we might have hope of disposing of our agricultural surpluses, if the drains could be enlarged and kept open. Dodge was evidently thinking of gold, not wheat, cotton, tobacco, and meat, when he spoke of closing the drains. He had much company in that kind of thinking in the 1880's and even much later.

Dodge's idea of production control by the farmers themselves, through readjustments in production based upon "a clear and searching glance into the future," had much in common with the idea held by the chief of the Bureau of Agricultural Economics in 1923 when agricultural outlook reports were initiated. Agricultural economics was in fact influencing the statistical work. In line with Commissioner Norman J. Colman's statement in 1887, Assistant Secretary of Agriculture, Edwin Willits, opened a wide field for the

[77] *Report,* 1888, pp. 474–75.
[78] U.S.D.A. *Report of the Secretary,* 1889 (Washington, 1889), pp. 201–02.

statistical division as the economic division of the United States Department of Agriculture in 1890. Willits said, "The Statistical Division more than any other considers all the forces that enter into the great and varied agricultural productions in our vast domain, so that intelligence shall decide what to plant, where to plant, and when to plant."[79]

Much of that was still an aspiration even after the Bureau of Agricultural Economics was set up. The broadening of the work of the Division of Statistics is also indicated in Secretary Jeremiah McClain Rusk's statement in 1891 regarding the Division:

> During the past year there has been an effort to give more prominence than usual to original investigation. . . . A more general and searching survey of the resources and condition of agriculture is necessary to a proper understanding of its practical and political needs. Such investigation is progressing, and bulletins illustrating these conditions are in preparation. Some will present the status of rural industry in the older States, and others will show the resources and agricultural development of the States of the prairies and the plains. . . .
>
> Special investigation is in progress in various lines in Europe for more exact data relative to production and prices of products with which America competes. It is realized by all thoughtful minds that while home consumption requires nine-tenths of our agricultural production, an active demand for any surplus relieves stagnation in the markets and advances prices. As this demand is limited and variable, its stimulation in certain lines is practicable and desirable. An agent is now in Europe laboring zealously against existing prejudice for the substitution of corn for rye, potatoes, and other food of the laboring masses. Much can be done towards enlarging both the quantity and variety of our exports of the products of agriculture, and the first step in this direction must be a more intimate knowledge by our own people of the condition and character of foreign markets. This information it devolves upon this division to provide. . . .
>
> Another feature of foreign agriculture which has commanded attention in the work of this division has been what might be called "the political economy of farming," and careful compilations have been made of the cooperative bank and loan systems of several countries, including Russia, France, Germany, Austria-Hungary, and others, in so far as they apply to the farming community. . . . In these days there is no distance limitation to possible competition, and it is incumbent upon the Statistical Division of this Department to investigate the conditions of agriculture throughout the world, for there is no section of the civilized world which may not at some time and in regard to some product be found to be a competitor of the American farmer, nor in which at some time and for some product the American farmer may not find a possible market.[80]

Again in his report for 1892 Secretary Rusk said, "A special section has been established in the division [of statistics] for the collection and distribution of information calculated to enlarge our exports of agricultural products to the countries of Latin America."[81]

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[79] Edwin Willits, "The Scientific Work of the Department in Its Relations to Practical Agriculture," U.S.D.A., Special Report of the Assistant Secretary in the *Report of the Secretary*, 1890 (Washington, 1890), p. 73.

[80] U.S.D.A., *Report of the Secretary*, 1891 (Washington, 1892), pp. 37–39.

[81] U.S.D.A., *Report of the Secretary*, 1892, p. 35.

Jacob Richards Dodge appraised the development of the Division of Statistics of the United States Department of Agriculture in his final report in 1892:

> Entering the Department on the 17th of July, 1862, two weeks after its organization, I was engaged in special statistical investigation before the organization of the Division of Statistics and in editing and writing the annual report of the Department until May 6, 1866, when I was appointed Statistician, *vice* Lewis Bollman, who for over two years had officiated as the original incumbent of that office. It was a small beginning with a single clerical assistant. The monthly report of statistics[82] was published about the 20th of each month, and was for many years the only serial issue of the Department. . . .
>
> The work of the division, at first very limited in scope and area, now includes, besides organized original investigation in this country and Europe, the collection and coordination of the official and commercial statistics of agriculture of the world. Instead of one clerk, the office force, including compilers, translators, computers, and copyists, now numbers 60. . . .
>
> The work of the year past, which includes the voluntary service of some 15,000 regular reporters, and of about 125,000 representative farmers, in returns of crop production and area of cultivation, has been in some respects more comprehensive than usual. It has covered nearly every republic, empire, monarchy, and dependency in the world. It is becoming more varied, extensive, and exacting than ever; as the country grows, its industries multiply, and demands for statistical data increase for legislative and business uses. . . .[83]

Dodge's review may be compared with a brief statement about the statistical work of the United States Department of Agriculture made by George K. Holmes who praised Dodge in the following language:

> The crop-reporting system of the Bureau had hardly grown into working order when J. R. Dodge became [in 1866] the chief of the bureau, or of the division as it was called in those days. His mind was so constituted that he acquired a very good understanding of the system and was able to improve it gradually. . . . Mr. Dodge had an active and intellectual mind and worked extensively in the field of special reports and investigations outside of technical crop reporting. He early began the investigation of the wages of farm labor with such success that from time to time he continued it for many years. Many of his special investigations, however, were dependent on materials derived from other collectors of information rather than from information collected from the correspondents of this Bureau. . . .
>
> . . . Mr. Dodge's special articles were concerned with the foreign trade of the United States in agricultural products, with the movement of agricultural products to the principal markets, and with special products, such as wool, beet sugar, wheat, cotton, and so on. . . .[84]

In 1893 Dodge reached the retirement age of seventy and, being a man of health and energy, returned to journalistic writing which

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[82] The *Monthly Report* was published monthly, May–November 1863; bimonthly, January–November 1864; monthly, January 1865–February 1876. See also footnote 68, p. 192.

[83] U.S.D.A., Report of the Statistician, J. R. Dodge, in *Report of the Secretary,* 1892 (Washington, 1893), pp. 403–04.

[84] G. K. Holmes, "Special Investigations," U.S.D.A., Bureau of Crop Estimates, *Meeting of the Field Agents, Crop Specialists and Administrative Officials of the Bureau of Crop Estimates,* at the National Museum, Washington, Jan. 22–27, 1917 (mimeo.), p. 6–B. (A copy is filed in the U. S. Department of Agriculture library.)

he had left in 1862. He thereafter served the farmers for many years through the columns of the *Country Gentleman.*

The National Board of Trade Shows an Interest

While Jacob R. Dodge was promoted to the position of government statistician in 1866, and made the unusual record of holding a responsible position at the head of a government agency until the age of retirement in 1893, it does not follow that his work was not at times criticized. In 1887 and 1888 the National Board of Trade[85] gave considerable time to discussing the work of the Division of Statistics of the United States Department of Agriculture and to Mr. Dodge as a statistician. It seems desirable to give this discussion somewhat in detail as it portrays the thought of the time.

At the January meeting of the National Board of Trade in 1887, Mr. McLaren, of the Milwaukee Chamber of Commerce, submitted the following resolution:

> Whereas, The system adopted by the United States Agricultural Bureau of reporting monthly changes of condition of grain and cotton crops, subserves no useful purpose to the agricultural and commercial interests of this country; and
>
> Whereas, Such monthly estimates of condition enable our foreign customers to establish values for our crops in advance of the harvest, often *less* than the actual out-turn would warrant; therefore
>
> *Resolved,* That it is the opinion of the National Board of Trade that the United States Agricultural Bureau should report on the *acreage* as soon as it is definitely ascertained, and on the *yield* of grain and cotton only at the end of the calendar year.[86]

After Mr. McLaren had elaborated upon the resolution, Charles B. Murray,[87] of Cincinnati, and other members of the Board discussed the resolution as follows:

> Mr. [Charles B.] Murray, of Cincinnati: I think there is some misapprehension on the part of the people in the northwest in regard to the merit and value of these monthly statements. My understanding of such information is, that it is valuable as a comparative statement, and that these reports from year to year, when they are considered consecutively, are found to be fair and approximately correct. So far as indicating the actual yield of any product is concerned, they cannot be accurate. That may be admitted. But so far as the question of report from month to month is concerned, I think there is value in this estimate of the Government, in setting aside the effect and influence of a class of reports that emanate from trading men. . . . If we dispose of these Government reports, we shall give rise to a class of irregular and irresponsible estimates from time to time through the season, that will be calculated to bring a great deal of injury upon the trading community.
>
> Mr. Schryver, of Baltimore: As a representative from Baltimore, I desire to say that while we do not have very much faith in the accuracy of any

[85] The National Board of Trade was organized in 1868, and nearly 20 years elapsed before Dodge's work was attacked by members of that Board. Even then the friends of his work proved to be more numerous and influential than the enemies.

[86] National Board of Trade, *Proceedings,* 1887 (Boston, 1887), p. 12.

[87] Father of Nat C. Murray, Editor of the Cincinnati *Price Current,* and member of the National Board of Trade. C. B. Murray's contribution to the development of crop estimating during the years 1887 to 1907 was so important that extensive references have been included.

reports, we have more faith in the reports of the Government than in those from any other source. . . . As the gentleman from Cincinnati has said, no confidence can be placed in the commercial reports. . . .

Mr. Baker, of Chicago: The question is not as to the accuracy of the reports made by us who are in the trade, but as to the accuracy and utility of reports that are furnished by the Government. . . . The statistician of the Agriculture Department attempts to say, very early in the season, what the crop is going to be in bushels,[88] and whatever vicissitudes may happen to the crop after that, he never yet has been known to change that estimate materially, never more than a few million bushels. Instead of changing his figures he weaves into all his monthly reports an argument to substantiate his first and incomplete estimate. I think the proposition from the Milwaukee Board is a wise one, and on behalf of some of the members from Chicago I second it heartily.

Mr. Goodale, of Cincinnati: I rise to cordially concur in the remarks made by my associate, Mr. Murray, of Cincinnati, and also to second the suggestions made by the gentleman from Baltimore (Mr. Schryver). If the Government is credited with good intentions, would it not be more prudent for us to introduce a resolution which shall suggest an increase of the facilities? So long as the intentions are good, it may be possible to better the facilities and thus reach a satisfactory result. . . . I think that if, instead of voting for the Milwaukee resolution, we simply ask the Government to increase its facilities, we shall benefit the dealers in grain more than we could do by an attempt to abolish the reports altogether. If we do away with the Government reports, we will only give greater room for private reports which may be still more erroneous. . . .

Mr. Stranahan, of New York: It strikes me from the discussion we have had that it would be better to ask the Government to perfect the sources of its information and its reports than to destroy them. I trust that we will be patient with the Government, in the hope and expectation that those reports will improve with years, and finally give us valuable information on which we can rely with more certainty than we can at present. It is a new undertaking, and I think we ought to be patient with the Government in view of that fact. . . .

Mr. Young, of Baltimore: . . . We are thoroughly satisfied that, as far as the Government is concerned, those reports are honest. The Government has begun to furnish reports to merchants engaged in the grain trade. Let us help it to go further instead of asking it to relinquish what it has already entered upon.

Mr. Goodale: I offer the following as a substitute for the resolution of the Milwaukee Board of Trade:

Whereas, The monthly crop reports formulated by the United States Government have in the past contained numerous inaccuracies, which inaccuracies as we believe, are mainly due to poorly informed and careless correspondents; and

Whereas, Congress is proposing to establish the Department of Agriculture upon a more serviceable foundation than heretofore; therefore be it

Resolved, That the Bureau having in charge the crop statistics be memorialized to furnish the necessary money and to take proper steps towards securing more efficient correspondents in agricultural districts, to the end that a greater degree of accuracy may be reached in formulating statistics on growing crops, more especially on those of grain and cotton.

Mr. McLaren: . . . I am perfectly satisfied to accept the amendment of the gentleman from Cincinnati and let his resolution take the place of the

[88] This is not true. Bushel estimates were not made prior to 1911.

proposition from Milwaukee; and if the Government will follow out the line of his resolution we will see whether, by a properly devised system, these reports can be improved.

The question was then put on the adoption of the substitute offered by Mr. Goodale, and it was unanimously adopted.[89]

In January, 1888, representatives of the Chicago Board of Trade presented and advocated a resolution recommending that a commercial bureau of statistics be created and supported by the boards of trade of New York, Cincinnati, St. Louis, Minneapolis, and Chicago. That bureau was to "undertake the compilation and dissemination of accurate reports as to the acreage and yield of the various crops of the United States, especially those of grain and cotton."[90] William J. Pope spoke in favor of the recommendation in terms derogatory of the crop estimating work of the United States Department of Agriculture. Again Charles B. Murray arose to explain the work of J. R. Dodge which had apparently not been understood by Pope. Murray explained, for example, the difference between an estimate of acreage seeded and acres harvested "after a certain portion has been abandoned as not worthy of harvest."[91]

William S. Young, of Baltimore, said:

> There is something singular in the request which is here made, that the cities of Chicago, Minneapolis, Cincinnati, St. Louis, and New York, shall at their own expense employ a statistician to collect these statistics. If they propose doing that, what is to hinder their employing statisticians at once to collect these very data. . . . We are better satisfied in our latitude, with the reports which are given to us by Mr. Dodge, who now has charge of that [government] Department; we are better pleased in every way than we ever have been with information from any other source. . . . I do want to see the present official reports maintained, for I believe that by long odds they are the most reliable that ever we have had.[92]

John A. Gano, of Cincinnati, did not think well of the Chicago resolution and proposed as an alternative a committee of seven to bring about a reform in the matter of official statistics. Having presented his resolution, Gano continued: "My own belief is that the Government can do that work, and I am entirely sure that it is not now done for any other purpose than for the benefit of the country; consequently, I believe that the machinery of the Government is sufficiently effective."[93]

E. M. Schryver, of Baltimore, who was not in favor of the Chicago resolution, said:

> . . . It is idle to deny that if the Exchanges who are interested in this matter should undertake to organize a [private] Bureau of Statistics, those who

[89] National Board of Trade, *Proceedings,* 1887 (Boston, 1887), pp. 14–20.
[90] *Proceedings,* January 1888, p. 96.
[91] *Proceedings,* January 1888, p. 100.
[92] *Proceedings,* January 1888, pp. 100–01.
[93] *Proceedings,* January 1888, p. 105.

might become the customers of such Exchanges would begin from that moment to suspect the information received. . . .

I am very decidedly in favor of Mr. Gano's resolution. The great body of the people are going to look to the Government reports as the basis of their operations, as sure as the world, and so our purpose will be better served if those reports are made more accurate.[94]

William T. Baker, of Chicago, spoke in praise of C. B. Murray as a crop estimator but criticized J. R. Dodge. The Gano substitute resolution was lost on a tie vote, and Baker's resolution to set up a committee to plan a private Bureau of Statistics supported by the five boards of trade was adopted.

In the report of a meeting in November 1888, 20 pages were devoted to a discussion of monthly crop reports, with one resolution, presented by Baker of Chicago, to abolish, but with a counter-resolution, by Bacon of Milwaukee, to improve the reports. Those who favored abolishing the monthly reports claimed that they disturbed the market. Opposition to the Baker resolution came from St. Louis, Louisville, New Orleans, Cincinnati, from one Chicago member (though two spoke for it) and from two from Milwaukee:

Mr. Bacon, of Milwaukee: Mr. President, I wish to offer a substitute for this proposed resolution from the Chicago Board of Trade, and I will preface it by saying that it seems to me instead of depriving the country of the benefit of these reports of the Agricultural Department, however imperfect they may be — and I do not say they are perfect or nearly so by a great deal — we should take such steps as will enable the Department to secure accuracy and completeness in its reports. . . . I offer the following as a substitute:

Whereas, The annual appropriations made by Congress for the use of the Agricultural Bureau have been insufficient to enable the Bureau to make such outlay as seems to be requisite to insure the necessary completeness and accuracy of its monthly estimates of the area and condition of the various crops of the country, and the desired promptitude in publishing the same, therefore,

Resolved, That Congress be memorialized by this Board to make such appropriations for the use of this Bureau, or the newly established Department of Agriculture, as may be deemed necessary for the purpose by the head of said Bureau or Department; and further,

Resolved, That the Bureau or Department be respectfully requested to take into consideration the expediency of establishing agencies at the several State capitals, whose duty it shall be to collect and collate statistical information and transmit the results to the Bureau or Department, by telegraph, with a view to securing the more expeditious compilation of the same, and the publication of the general result for the country at large, not later than the fifth day of each month. . . .

Mr. Fusz, of St. Louis: I rise to second the substitute of Mr. Bacon. We need monthly reports because in our business — I am a flour manufacturer — we try constantly to post ourselves on the situation of the crops of the country, whether we do it privately, or whether we obtain the information from private sources or from agencies. I know of no authority at present to which I would

[94] *Proceedings,* January 1888, pp. 106–07.

give more credence than that under the auspices of the Federal Government. What we need to-day is not to destroy, but to improve. . . .

Mr. Sidwell, of Chicago: I desire also to second the motion of Mr. Bacon, though our Board has sent this resolution up for adoption by the National Board. I do this for the following reason: That the Department at Washington does furnish statistics that are better than nothing, and better than those furnished by other parties. . . .

Mr. John A. Gano, of Cincinnati: . . . . It has been well put by two or three of the gentlemen advocating the proposition of Mr. Bacon that, if the statistics are insufficient, or if they are inaccurate, the mercantile interests of the country should make themselves felt and have them made as they ought to be. If that is not the case, is not the mercantile community delinquent in its duty and, therefore, has it any right to complain?

. . . Statistics are very difficult to get. I do not believe there are any more difficult to get than those in regard to agriculture. . . . But the process of education is going on by the system such as Ohio has for the collection of statistics. The process of education is going on by the system that the General Government has. Consequently, it seems to me, we should aid the Government and enable them to see that these sources of information are true and that the information compiled is accurate and reliable. . . .

Mr. Coleman, of New Orleans: . . . . If we are going to abolish these monthly crop reports, what about cotton? We are very much interested in that in the South. Then there is sugar and there is tobacco. Tobacco has been mentioned by the gentleman from Louisville. While admitting that the monthly reports of the Government are not as correct as we would like to have them, you do not help matters by abolishing them. . . . I would like to see corrected that which needs correcting. Discharge Mr. Dodge if he is not a competent officer and put some one in his place who is more competent. Instead of abolishing the monthly reports, improve them, and let the merchants of the country be instrumental in this improvement. Let the merchants of the country go to the Government and ask it to improve the monthly reports and not abolish them. . . .

The question was then taken on the substitute offered by Mr. Bacon of Milwaukee. and it was agreed to.[95]

Thus the adult educational process was going on in the National Board of Trade in the late 1880's. Discussions in the meetings of that Board show something of the atmosphere in which the government statistician carried on his work. On the whole, J. R. Dodge must have been encouraged by the outcome of the discussions. A resolution urging Congress to increase the appropriations of a given bureau is usually much appreciated by the chief of that bureau. It was after Dodge retired that a vigilance committee of the National Board of Trade really became active. It was fortunate that the Board had developed a constructive approach to the subject during the Dodge regime.

J. R. Dodge resigned his position as statistician on March 20, 1893,[96] and was succeeded by Henry A. Robinson. In less than two years Robinson was severely criticized by the National Board of Trade. In January 1895, that Board passed two resolutions relative

[95] *Proceedings,* November 1888, pp. 59–60, 67, 69, 71–4.
[96] *Dictionary of American Biography* (New York: Charles Scribner's Sons, 1930), 5:350.

to government crop reports. Charles B. Murray presented the first one which read:

Whereas, The monthly and yearly crop reports of the United States Department of Agriculture have in recent years been confusing, misleading, and manifestly erroneous in important particulars; therefore,

Resolved, That if the crop-reporting service of the Government is to be continued, it should be required that every needful effort be made for insuring the fullest degree of efficiency in the work, with reference to completeness and accuracy of data, and that the dissemination of the information should be conducted in such a manner as to preclude misunderstanding in regard to the import of such reports and their relation to or comparison with previous statements.[97]

After discussion of the Murray resolution, the following was presented by A. C. Raymond, of Detroit, a friend of Henry A. Robinson:

Resolved, That a committee of seven be appointed by the President, to wait upon the Secretary of Agriculture and the Statistician of that department, with a view to arranging a conference with them by representatives from commercial organizations of the United States, for the purpose of devising a system of agricultural reports which shall regularly furnish to the public the most accurate, reliable and complete information concerning the agricultural products of the United States.[98]

The chair appointed the committee thus provided for, including Murray and Raymond who were the above initiators of the resolutions, and Blanchard Randall of Baltimore, G. F. Stone of Chicago, W. J. Boyd of St. Louis, D. B. Smith of Toledo, and Breedlove Smith of New Orleans. That committee came to be known as the Committee on Crop Reports. Charles B. Murray served as chairman of the committee from 1895 to 1907.

Having arranged matters with the Secretary of Agriculture, J. Sterling Morton, the committee called a conference to be held in Washington, April 15, 1895.

. . . The conference met accordingly. . . . A minute inquiry into the present methods of the division, and also the methods of crop reporting in several European countries, was made, the Statisticians furnishing a written statement and submitting to a wide range of questions. Discussion of an annual agricultural census, and of the qualifications of county bankers and assessors as crop correspondents, revealed wide differences of opinion. Papers by various delegates, making a number of suggestions for improvements and supposed improvements, were read and canvassed, with the final result that a committee of five was selected to "summarize the salient features and ideas that had been presented at this conference and give them to the public." That committee subsequently made a report, which after a full discussion was with a few amendments adopted by the entire conference, as follows:

RESOLUTIONS OF THE CONFERENCE ON AGRICULTURAL REPORTS

This conference, called to consider means by which the crop-reporting service of the Department of Agriculture may be improved and the official

[97] National Board of Trade, *Proceedings,* 1895 (Boston, 1895), pp. 111–12.
[98] *Proceedings,* 1895, pp. 115–16.

results made more satisfactory to the public, beg to submit for the consideration of the honorable Secretary of Agriculture the following suggestions:

That it is the judgment of the interests represented in this conference that the official crop-reporting service should be maintained, and that the reports now regularly issued be continued, with such modifications as hereinafter suggested.

(1) That the April report on winter grain be discontinued, but that all other features now embodied in that report be continued.

(2) That in all reports concerning acreage of the various crops reported upon, the Department give the area by States in acres, as well as by the percentage of the previous year's area.

(3) That the Department, instead of having a principal correspondent and three assistants in each county, as at present, make an effort to secure the regular service of one or more reporters in each township, all to make their reports directly to the Department at Washington.

(4) That in the selection of these correspondents they should not be taken from farming classes exclusively, but should include, so far as possible, representatives of all classes of rural industry.

(5) That the Department discontinue the employment of salaried State agents in the regular crop-reporting work.

(6) That the returns of reserves of wheat, corn, oats, and cotton be had for dates representing the close of the crop year; wheat on July 1, oats on August 1, corn on November 1, and cotton on September 1.

(7) That arrangements be perfected with the United States consular service for sending by cable to the Department, on or about the 9th of each month, a statement giving the best available information concerning prospects for crops of grain and cotton in their respective districts, to be published in connection with the domestic crop report when issued.

(8) That it is the sense of this conference that a law should be enacted punishing by fine and imprisonment any employee of the Department of Agriculture who divulges to any one outside of the Department of Agriculture any statistical or other general information of the Department previous to the time appointed for officially presenting the same to the public.[99]

H. A. Robinson, Crop Estimator

The statistician, H. A. Robinson, considered the third "The most important of these modifications," and took steps at once to develop a list of township reporters. He did not, however, discontinue the use of county correspondents, nor did the Department "discontinue the employment of salaried state agents in the regular crop reporting work" as proposed in suggestion five. The statistician explained:

The aid of salaried State agents has not been given up, for their reports are often found useful and sometimes invaluable in supplying deficiencies and detecting errors in those of the county correspondents. But in the belief that a considerable economy in the cost of this service could be easily and advantageously introduced, it has been decided to cut down the number of these agents, selecting the most efficient of them for retention. . . .

In the inquiries of the July monthly circular, a question as to stocks of

[99] U.S.D.A., *Report of the Secretary,* 1895 (Washington, 1895), pp. 120–21.

old wheat in farmers' hands was added. It is intended to make the other inquiries recommended in the sixth suggestion as the dates for them come around.[100]

At the next meeting of the National Board of Trade, January 1896, C. B. Murray reported for the Committee on Crop Reports in terms which indicated his dissatisfaction with the Division of Statistics of the United States Department of Agriculture and then made the following proposal which was adopted:

In view of these and other evidences of the inability of the Department of Agriculture to satisfactorily compass the work of crop reporting, and to furnish assurance to the interested public that its statements may be relied upon, it is hereby recommended that a committee of the National Board of Trade be maintained, whose duty will be to submit at the next annual meeting such information in regard to the workings of this important branch of the Government service as may be pertinent, and so far as occasion may arise to correspond with or co-operate with the officials of the Department with a view to promotion of the best possible methods in the performance of such work.[101]

In his report to the Secretary of Agriculture for the year ending June 30, 1896, H. A. Robinson sought to justify the work of the statistical division and to show that it was being improved. He described the system in use as follows:

The method of crop reporting, in use for many years, by means of correspondents who endeavor to establish averages for a county, has been continued during the year, supplemented, as elsewhere stated, by the system in charge of State agents and by the township correspondents.

With these three means of ascertaining various facts with regard to crops — such as area, amount of product, value, present condition, etc. — it is confidently asserted that in the breadth of its statistical basis the opportunities for accurate crop reporting by this division have been, during the past year, superior to those in any similar work heretofore done in this or any other country.

With county correspondents varying from 9,000 to 10,000 in number, with State statistical agents and their assisants numbering from 6,000 to 7,000, and with a corps of township correspondents having about 28,000 members, each group working independently of the others, the Department has at its service the amplest resources it has ever yet commanded.

Besides the force of more than 40,000 regular correspondents above mentioned, the office has an important auxiliary force in some 15,000 millers, grain dealers, and elevator owners, and 123,000 selected farmers, from whom for special purposes reports are received. With this corps of about 180,000 regular and occasional correspondents, it is possible to do a large amount of valuable and original statistical work, as elsewhere suggested, concerning agriculture and related subjects.[102]

At the annual meeting of the National Board of Trade held in Washington, D. C., January 1897, the chairman of the Committee on Crop Reports, C. B. Murray, as though in reply to Robinson,

[100] U.S.D.A., *Report of the Secretary,* 1895, pp. 121–22.
[101] National Board of Trade, *Proceedings,* 1896 (Philadelphia, 1896), p. 220.
[102] U.S.D.A., *Report of the Secretary,* 1896 (Washington, 1896), p. 115.

referred to suggestion seven[103] of the conference committee of April 1895, and made some additional suggestions for the improvement of the crop reporting work as follows:

> One of the recommendations of the conference committee contemplated a comprehensive cablegram monthly from some competent foreign source, with a view of enabling the Department to present an intelligent statement of the general situation in other countries simultaneously with the reports of domestic crops. . . . Your Committee is advised that the Statistician of the Department conceded the desirability of such an arrangement, and repeatedly asked for authority to plan for its execution. . . .
>
> While the thoughtful and informed observer must concede that no official effort can be expected to be equal to securing perfect results in this field of service, this fact does not detract from the general usefulness of the work, and of the desirability of its maintenance under a continued effort and determination to lessen the degree of imperfection.
>
> It is the opinion of your Committee that the Department may with all propriety, and in fact should, extend its investigations with a view to the presentation of approximations in regard to the annual production of various minor crops not now so reported upon. For instance, such crops as clover, timothy and flax seed, broom corn, Kaffir corn, peanuts, apples, peaches, and perhaps a number of other products of more or less importance. . . .
>
> Your Committee are of the opinion that much of the occasion for criticism of the estimates of production of leading crops, generally based on evidences that such statements reflect underestimates as to aggregate yield, is due to lack of approximately correct information as to the area under such crops, and that therefore there should be a more complete canvass of the question of acreage.[104]

On March 5, 1897, James Wilson became Secretary of Agriculture. Wilson had been a farmer, a State legislator, a member of Congress, director of the experiment station and Professor of Agriculture at the Iowa State College. Wilson soon made a change in the leadership of the Division of Statistics. The reason for letting Robinson go can best be told in words from a man who was in the division at the time, and by two others who served for long periods in the bureau and had studied its history. In an address to the field agents of the Bureau of Crop Estimates in 1917, George K. Holmes shed some light upon the work of Henry A. Robinson. Holmes said:

> In 1893, a new chief came into the Bureau, the trend of whose mind was very different from that of Mr. Dodge's. He had economic, social, and monetary theories that were uppermost in his mind. He made the mistake of using his opportunity to exploit certain of his theories. One of the evidences of this is an early circular of this Bureau published in 1896 concerning the "Farmer's Interest in Finance." You have heard probably that there was some talk in those days concerning the unlimited coinage of silver at the ratio of 16 to 1 of gold. This little circular was issued to incite farmers to a greater interest in behalf of the unlimited coinage of silver, although at the same time the Secretary of the Department was known as a "gold man". . . .
>
> Another subject that was a prominent one in the Bureau from 1893 to 1897 was the single tax, and the chief of the Bureau published a pamphlet to

[103] See *supra*, p. 205.
[104] National Board of Trade, *Proceedings*, January 1897 (Philadelphia, 1897), pp. 226–27.

advance the cause of the exclusive taxation of land. . . . This pamphlet was issued in the middle of February, 1897, and it was suppressed by the Department on the afternoon of the following 4th of March, when the administration changed.[105]

Nat C. Murray has more recently made the following appraisal of Henry A. Robinson: "a purely political appointee, without qualification as a statistician."[106]

Joseph A. Becker said:[107]

Apparently Robinson was lacking in practical judgment of agricultural developments during those years. In making a historical study of the acreage and production series, which led to a wholesale revision,[108] it was obvious that the estimates for the 1892–97 period were not comparable with earlier and later estimates. Examination of the data and testimony of those who had been in the Bureau at the time disclosed that Robinson had insisted on using the reported percentages (of acreage 'this year' compared with 'last year'), which had, as always, a considerable downward bias, without adjustment of any kind. Apparently Dodge had adjusted the reported figure to allow for underestimation. Robinson's practice successively decreased acreages of all crops until the figures became absurd. This low base was in large measure responsible for John Hyde's troubles in 1901.

John Hyde, Statistician, 1897-1905

John Hyde an experienced statistician, was selected by Secretary James Wilson to take charge of the Division of Statistics on August 1, 1897.[109] He had served as chief statistician for agriculture in the census for 1890.

The objective of the Committee on Crop Reports of the National Board of Trade had not been a change in statisticians but better reports. Therefore it renewed its efforts with the new officials:

Your committee recommend that the Honorable Secretary of Agriculture and his statistician be invited to consider the various suggestions heretofore offered by this body, looking to the betterment of and more complete service in crop reporting work, and to be assured that the commendation of the membership of this body and of other interests concerned in this important work will be secured when the possibilities naturally within the scope of the office shall be more fully attained than the recent years have demonstrated. . . .

Your committee recommends the adoption of the accompanying resolutions:

Resolved, By the National Board of Trade that the proposed Act to prevent and punish the divulging of crop reports of the Department of Agriculture in advance of publication, now before this body, be recommended to and urged upon Congress for passage, as a measure calculated to prevent a serious evil.

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[105] Holmes, "Special Investigations," p. 6–C. (See footnote 84 *supra*, p. 198.)
[106] Nat C. Murray, "A Close-Up View of the Development of Agricultural Statistics From 1900 to 1920," *Journal of Farm Economics,* 21:708 (November 1939).
[107] Personal interview, 1948.
[108] See U.S.D.A., *Yearbook,* 1935 (Washington, 1935), p. 346.
[109] C. H. Greathouse, "Historical Sketch of the U. S. Department of Agriculture; Its Objects and Present Organization," U.S.D.A., Division of Publications, *Bulletin* 3, revised ed. (Washington, 1898), p. 35.

Resolved, That the Department of Agriculture should make more explicit effort than has manifestly been made in recent years for securing accurate information as to acreage of crops reported upon, in order that the basis of calculations as to production shall have the smallest possible element of error.

Resolved, That if the Secretary of Agriculture should find the appropriations applicable to the Statistical Division of his Department inadequate, such needful further appropriation should be provided for by Congress.[110]

Hyde quickly took several steps which were intended to improve the quality of crop reporting service. During the year ending June 30, 1898, the number of state agents was increased from 20 to 41.[111] At the end of the next year the state agents had "8,730 correspondents, upon whose reports their monthly statements were mainly based."[112]

In his first report Hyde recommended:

. . . the appointment of five traveling inspectors, whose duties shall include the periodic visitation of State and county agents, and who shall visit the principal agricultural regions after seedtime and during critical periods of the growing season, and finally, after harvest, reporting the results of their observations to the Statistician.[113]

But the five inspectors were not appointed.

Another step taken by the new administration was the issuance, beginning in May 1899, of a new publication called *The Crop Reporter,*[114] which was:

. . . designed for the exclusive use of the Department's crop correspondents. The necessity of compressing into very small space the instructions printed upon the monthly reports, the marked localization of the area of production in the case of not a few of the crops reported upon, and the general lack of uniformity in the agricultural methods and conditions obtaining in the different sections of the country have alike suggested the employment of some agency by which correspondents could be more fully instructed as to their duties and the instructions given them be better adapted to their various needs. Such an agency has been found in the new publication, which has been received with many expressions of satisfaction by correspondents in every part of the country. By anticipating their needs, interesting them in their work, making intelligible to them the relation which, as individual correspondents, they bear to one of the most important branches of the work of the Department, and putting in their possession, without trespassing upon the province of the agricultural journals, a great variety of information calculated to make them better judges of agricultural conditions and consequently more valuable correspondents to the Department, *The Crop Reporter* has been the means of greatly improving the crop-reporting service, while incidentally reducing the enormous correspondence of the Division by nearly one-half.[115]

That first number of *The Crop Reporter,* four three-column quarto pages, devoted half of the first page to instructions relating

[110] National Board of Trade, *Proceedings,* December 1897 (Philadelphia, 1898), pp. 311–12.
[111] U.S.D.A., *Annual Reports,* 1898 (Washington, 1898), p. LX.
[112] U.S.D.A., *Annual Reports,* 1899, p. 264.
[113] U.S.D.A., *Annual Reports,* 1898, p. LX.
[114] *The Crop Reporter* was published May 1899 to June 1913 inclusive.
[115] U.S.D.A., *Annual Reports,* 1899 (Washington, 1899), p. 265.

specifically to the reports due June 1, 1899. The importance of the acreage reports was emphasized with a comment as follows:

While the Department's estimates of acreage have occasionally been too high, they have much more frequently been too low, as proved by a subsequent census or other sufficiently conclusive test of their accuracy. This liability to error is doubtless the result of over-conservatism on the part of correspondents, and should be carefully guarded against. All the conditions that have a tendency to increase the acreage in any crop reported upon should be considered. Among these may be mentioned an advance in the market price of the product; the bringing of new land under cultivation, either by the opening up of new farms, the tillage of land hitherto unimproved, or the extension of irrigation; and last, but by no means least, so far as concerns the principal agricultural States, any increased favor with which a particular crop is regarded, on account either of its peculiar adaption to local conditions of soil and climate, or of the increasing disfavor of some other crop. While a reduction of acreage does not appear so readily to escape the attention of correspondents, but, on the contrary, is somewhat liable to be overestimated, no less care should be exercised in determining its approximate extent.[116]

That issue of *The Crop Reporter* also defined "normal" by saying:

So many of the reports of the Statistician of the Deparment of Agriculture are based upon a comparison with the "normal" that it is a matter of the greatest importance that there should be a clear understanding of what the normal really means.

To begin with, a normal condition is *not* an *average* condition, but a condition *above* the average, giving promise of *more than an average crop.*

Furthermore, a normal condition does *not* indicate a *perfect* crop, or a crop that is or promises to be the very largest in quantity and the very best in quality that the region reported upon may be considered capable of producing. The normal indicates something *less* than this, and thus comes between the average and the possible maximum, being greater than the former and less than the latter.

The normal may be described as a condition of perfect healthfulness, unimpaired by drought, hail, insects, or other injurious agency, and with such growth and development as may reasonably be looked for under these favorable conditions. As stated in the instructions to correspondents, it *does not* represent a crop of extraordinary character, such as may be produced here and there by the special effort of some highly skilled farmer with abundant means, or such as may be grown on a bit of land of extraordinary fertility, or even such as may be grown quite extensively once in a dozen years in a season that is extraordinarily favorable to the crop to be raised. A normal crop, in short, is neither deficient on the one hand nor extraordinarily heavy on the other. While a normal condition is but rarely reported for the entire corn, wheat, cotton, or other crop area, at the same time or in the same year, its local occurrence is by no means uncommon, and whenever it is found to exist, it should be indicated by the number 100.

Sometimes a favorable season for planting is followed by a favorable growing season, with no blight and no depredations by insects, the result being a normal condition. At other times the normal may be maintained by conditions that are exceptionally favorable in one or more particulars coun-

[116] U.S.D.A., *Crop Reporter,* 1:1 (May 1899).

terbalancing conditions that are unfavorable in other particulars. Thus, a crop may have had such an unusually good start that it may pass without injury through a period of drought that would otherwise have proved disastrous to it, or its more than ordinary vigor and potentiality may fully offset some slight injury from insects.

The normal not being everywhere the same; in determining how near the condition of any given crop is to the normal, correspondents will usually find it an advantage to have a definite idea of what yield per acre would constitute a full normal crop in their respective districts; that is, how many bushels, pounds, or tons per acre of a particular crop would be produced in a season that was distinctly but not exceptionally favorable. In a region where 30 bushels of corn may be taken as the normal, a condition of 90 would give a prospect of a crop of 27 bushels, and 80 a crop of 24 bushels. If 40 bushels be considered the normal yield, 90 (or ten per cent less than the normal) would indicate a crop of 36 bushels, 80 one of 32 bushels, 70 one of 28 bushels.

For the reason that the normal, represented by 100, does not indicate a perfect or the largest possible crop, it may occasionally be exceeded. The condition may be so exceptionally favorable as to promise a crop that will exceed the normal, and it will accordingly have to be expressed by 105, 110, or whatever other figures may seem warranted by the facts; 105 representing five per cent above the normal, 110 ten per cent, and so forth.[117]

Joseph A. Becker said in personal conversation, in 1948, that the above statement has been a standard definition and also said that the quality of the condition reports indicates that they were understood. It is as the condition approaches 100 that the farm reporter falters.

The opening announcement of *The Crop Reporter* made it clear not only that the paper was to be available to government crop reporters only, but that the reporter would receive the publication only "so long as he continues to supply the Statistician with the information asked for."[118] In addition to the regular section carrying reports on crop conditions and news items on agriculture and agricultural trade, there was a wealth of material on foreign crops and markets.

John Hyde soon established confidence in the work of the Division of Statistics. That is reflected in the December 1898 proceedings of the National Board of Trade in which a statement from the Committee on Crop Reports reads as follows:

> It is with much satisfaction your committee is enabled to report that under the recent administration of affairs of the Division of Statistics of the Department of Agriculture, there has manifestly been an earnest effort to remedy faulty characteristics of methods. . . . The Statitician has recently announced that special and unusual efforts are being made to secure accurate data concerning the acerage of wheat harvested in 1898. He has also given assurance of making every effort for prevention of leakage of information as to the showing reached in the monthly investigations. Altogether the occasion for criticism has been largely removed.[119]

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[117] U.S.D.A., *Crop Reporter*, 1:3.
[118] U.S.D.A., *Crop Reporter*, 1:1.
[119] National Board of Trade, *Proceedings*, December 1898 (Philadelphia, 1899), pp. 297–98

But the committee did not relax its efforts. The trade wanted more as well as better statistics. At the January, 1900, meeting, C. B. Murray made some new requests and repeated some former ones:

> There may be with propriety, and with much of trade interest, an extension of inquiry concerning minor crops, such as flaxseed, clover seed, broom corn, etc.
>
> Your committee is of the opinion that the statistical division should further extend special effort with reference to area under leading crops. It is believed that here lies the basis mainly of the under calculations as to production. . . .
>
> Your committee is of the opinion that the United States Department of Agriculture should arrange for comprehensive cable information to be received at dates consistent with the dissemination of the usual domestic crop information, such cable statements to be prepared in one of the European markets convenient for favorable and reliable possession of such data, so that when our monthly reports are issued they would be comprehensive with regard to the world's position of leading crops. . . .[120]
>
> Your committee would commend to foreign governments the desirability of uniformity in crop-reporting methods, and believes that the system adopted by the United States is the most practicable in regard to information concerning crop conditions.
>
> Your committee would also commend a plan by which each of the governments reporting upon prominent crops shall, as soon as conclusions are reached, from time to time as a result of investigations, transmit by cable such conclusions to officials in charge of like service of other governments.[121]

It will be recognized that the National Board of Trade was asking for that which became the central feature of the International Institute of Agriculture which was established by an international agreement in 1905.

The next report indicated that John Hyde and C. B. Murray were getting along well. Murray reported:

> The occasion for appointment of a Committee on Crop Reports some years ago was due to apparent inconsistencies and manifest deficiencies or errors in the work of the Department of Agriculture. In the report submitted a year ago by such committee important improvement in these particulars was noted.
>
> Your committee recognizes the events of the past year as emphasizing two things: First, that the effort of the Statistical Division of the Department of Agriculture, to lessen or overcome the ground for complaint concerning its work, has been earnest and effective in a commendable degree; second, that the official service of this branch of the Governmental work is of far more importance than is generally accorded to it. Its influence is widespread and far reaching, not alone among trading men and mere speculative interests, but including the producer, the manufacturer and the transporter. The effect of crop-reporting work upon market values has been very pronounced within the past year, notably so with reference to wheat and cotton. The need of official work of the highest attainable degree of reliability has been very forcibly demonstrated. The importance of impartial, honest, intelligent and fearless presentation of statements of crop conditions has rarely if ever been more positively illustrated. The present Statistician of the Department of Agriculture appears to be working on these lines. Your committee is of

[120] *Proceedings*, January 1900, pp. 60–61.
[121] *Proceedings*, January 1900, p. 271.

the opinion that his power for usefulness might be strengthened by a more generous allowance of means applicable to high-class assistance. . . .

One of the features of complaint formerly in regard to Department of Agriculture reports was the evident dissemination privately of such advance information as enabled speculators to anticipate a forthcoming report and its influence on market values. Your committee is fully satisfied that the Statistician has completely remedied such matters, and that the work is now so guarded as to preclude the dissemination of such advance information. . . .[122]

John Hyde resigned in 1905 (cf. *infra*. pp. 216–17). The tone of his letter of resignation indicated that his work had been criticized continuously. A brief historical review of the investigations and pressures will give something of the atmosphere in which Hyde carried on the work as chief of the Bureau of Statistics and also some of the methods he used in dealing with his critics.

We have seen that up to 1901 the reports of the National Board of Trade had been remarkably favorable to Hyde's work as statistician. But at the close of the crop year 1901, the United States Department of Agriculture did not publish the estimated production of wheat, corn, oats, etc., for that year, as had been the practice every year since 1862. That failure drew severe criticism from the Committee on Crop Reports of the National Board of Trade. Hyde announced that final reports on the crops for 1901 would not be made until he could compare his estimates with the census data for 1899. To this the National Board of Trade responded:

The Department of Agriculture work concerning acreage and yield and numbers of animals should be offered with regularity and with promptitude, regardless of any other similar investigations. Corrections of deviation from lines of approximate accuracy should be made in the light of evidence calling for them, but no interruption to submission of statements should occur. The value of such information very largely depends upon its relation to statements previously issued, by way of comparison. If the crop reporting service of the Department of Agriculture is unable, without undue delay, to offer an approximately correct statement of the situation or results as a comparison with the preceding year, it has little claim for existence.[123]

That committee report emphasized the importance of estimates even though they may not be quantitatively correct if they are made year after year in accordance with an established system. The statement, "The value of such information very largely depends upon its relation to statements previously issued, by way of comparison," deserves careful thought. The trader thinks in terms of supply and demand as they affect price. He has held in mind the production estimates of previous years and noted the price trends which have accompanied the marketing of the product. The important thing for him to know is how the new crop compares with former crops with which he has had experience. It is the relativity that is important. What the trader wants is "a guide to current procedures and calcu-

[122] *Proceedings*, 1901, pp. 155–56.
[123] *Proceedings*, 1902, pp. 118–19.

lations."[124] The postponing of the December reports until the census figures were available the following July left the trader and the farmer without a guide for current action.

The emphasis upon the value of estimates, as an indicator of probable trends in supply and demand prices, had been voiced many times by C. B. Murray in his educational work with the members of the National Board of Trade. John Hyde had overlooked that point when he decided to postpone the issuing of the 1901 crop and livestock estimates. When the Twelfth Census statistics of agricultural production for 1899 were issued in July 1902, and compared with Hyde's estimates published in December 1899, the differences were so great as to occasion much comment. As a result, the National Board of Trade set up a Committee of Inquiry which was asked to seek the explanation of the discrepancies.

On September 16, 1902, the National Board of Trade's Committee of Inquiry on Agricultural Statistics began a nine-day investigation of the agricultural statistics work of the Census Office and the Division of Statistics of the United States Department of Agriculture.[125] At the beginning of the session C. B. Murray summarized the discrepancies in the acreage and yield reports on wheat, corn, and oats by states. For the entire country the acreages reported by the Bureau of Statistics were lower than those reported by the census by the following percentages: Wheat, 15 per cent; corn, 13 per cent; oats, 11 per cent. The Committee of Inquiry made a study of the census of agriculture, which will be noted on pages 268–70, and then made a study of the statistical work of the United States Department of Agriculture. John Hyde described methods used in assembling data for the crop and livestock estimates and the way in which the estimates were related to the data gathered and tabulated by the Bureau of the Census. In reporting the findings, the Committee of Inquiry reviewed Hyde's description of the methods used in making crop estimates and concluded:

> These particulars [presented in the report but not here included] indicate in a general way the methods of the Department of Agriculture in the crop-reporting work of the Statistical Division. They do not, however, represent all the elements which may have an influence upon the reliability of results reached and disseminated. Among the other factors which may be thus recognized are a possibly faulty area basis as a starting point, accepted from the latest census returns; a tendency to underestimate on the part of correspondents, in application of percentage comparisons; and a cumulative divergence from the true line by progressive application of such underestimates. Other factors of such nature include the qualifications of the service engaged in collating the information and formulating conclusions. . . .
>
> At the time the present Statistician took charge of the office, in 1897, there was a widely and, in fact, generally prevailing belief that the department crop satistics were seriously faulty. The new appointee had in his favor an experience in the division of agricultural statistics in the Eleventh Census

[124] *Proceedings*, 1902, p. 120.
[125] *Proceedings*, 1903, p. 81.

and otherwise, which supported a claim for confidence in his fitness for the position. In the nature of the situation, however, he has not had needful power for reconstruction of service under him. Nevertheless, with all that he has had to contend with, great improvement has been reached under his administration in elevating the character and increasing the reliability of the data furnished to the public, for which the Committee regards him as entitled to high commendation, especially under the evidences that the chief causes for defective results in his work have been in large degree attributable to conditions inherited, and which in the nature of the organization of the office could not be at once remedied, or were beyond his control.[126]

The report of the Committee of Inquiry unmistakably gives the impression that the authors of the report were more favorably impressed with the work of John Hyde, of the United States Department of Agriculture, than with the work of L. G. Powers, of the Bureau of the Census, and that Powers made too many generalizations as to the perfection of his work, which he did not adequately substantiate. On the other hand, John Hyde was successful in getting the Committee of Inquiry to see the difficulties with which he had to contend. He convinced them that he was doing exceedingly well in the circumstances.

Members of the National Board of Trade had been studying the crop estimating work for years and were much interested in it because they made use of the crop reports as a guide in their current trading, whereas they made little or no use of census reports in their daily tasks. The Committee of Inquiry commended Hyde and the next annual report of Murray's committee supported the crop reporting service.

John Hyde had worked hard to deserve that commendation. Throughout his administration of the Bureau of Statistics he contined his efforts to improve the quality of the service. In 1900 two statistical field agents were appointed.[127] Two years later two additional field agents were appointed.[128] Foreign crop reporting service had also been improved. Using the cable as a means of transmitting foreign "agricultural data during the four growing months" was mentioned by Secretary James Wilson in the *Yearbook* for 1900.[129] The Division of Statistics became the Bureau of Statistics on July 1, 1903,[130] and was organized with three divisions:

> . . . a Division of Domestic Crop Reports, a Division of Foreign Markets, and a Miscellaneous Division, which conducts special investigations and collects statistics on rural economics.
>
> The production and international movement of grain in the principal European countries is another subject which has received the earnest attention of the Division of Foreign Markets.[131]

[126] *Proceedings,* 1903, pp. 94–95.
[127] U.S.D.A., *Yearbook,* 1900 (Washington, 1901), p. 73.
[128] U.S.D.A., *Yearbook,* 1902, p. 92.
[129] U.S.D.A., *Yearbook,* 1900, p. 13.
[130] U.S.D.A., *Annual Reports,* 1904 (Washington, 1904), p. LXXXIX.
[131] U.S.D.A., *Annual Reports,* 1904, p. XC.

With that division of labor, with John Hyde as Chief of the Bureau, Victor H. Olmsted in charge of domestic crop reporting, and George K. Holmes in charge of the Division of Foreign Markets, the United States Department of Agriculture had an effective organization. Hyde was a statistician of ability. Olmsted and Holmes were competent men for their positions.

On August 1, 1904, Nat C. Murray, son of Charles B. Murray of the National Board of Trade, became one of the special agents of the Bureau of Statistics. Murray had participated in the work of preparing crop estimates in his father's office for publication in the *Cincinnati Price Current.* Nat has made his own report:

> My assignment as a field agent included five states (Ohio, Indiana, Illinois, Michigan, Kentucky), with a roving commission; and I was required to make a report upon the condition of the various crops as of the first of the month for each of the five states, similar to reports being made by the state statistical agents. It was not long before I learned from experience that it was impracticable, if not impossible, to report satisfactorily upon the condition of crops in each of five states as of a certain date by travel and observation alone. Questions as to percentage of increase or decrease of acreage, or of yield per acre, which did not relate to a specific date, could be investigated in this way, by contacting specialists in certain crops in various parts of the states covered. After some time I was authorized to maintain several hundred select correspondents, who reported to me as of the first of each month. These reports also helped me in planning my travels, because I generally went to those sections where my mailed reports were must conflicting, and this experience demonstrated the value of the now widely used combination of personal field observation with reports from correspondents.[132]

By 1904 the Bureau of Statistics was receiving data from four main sources, namely county reporters, township reporters, state agents, and field agents. It was then necessary to harmonize and select the data from these four sources in order to make up the crop reports. In due course it will be shown how the development of ideas led to the welding of this complicated four-part system into one unified system with all hands working together rather than serving as checks on each other.

Hyde had withstood criticism with courage through the years. Doubtless the favorable reports of Charles B. Murray, who had helped the members of the National Board of Trade to understand the character and value of the crop reports, had aided Hyde in carrying the load. But in 1905 he felt that, owing to ill health, he could carry the burden no longer and submitted his resignation to Secretary James Wilson in the following letter.

Washington, D. C., July 18, 1905

Dear Mr. Secretary: During the last four years, or since I succeeded in making the crop reports of the Department reasonably accurate and correspondingly valuable to the agricultural and commercial interests of the

[132] Nat C. Murray, "A Close-Up View of the Development of Agricultural Statistics From 1900 to 1920," *Journal of Farm Economics,* 21:709 (November 1939).

country, my administration of the office I have the honor to hold has been constantly under fire from one side of the market or the other. Five times it has been investigated, and on every occasion I have been vindicated. In January, 1903, I was awarded $2,500 damages in a libel suit against a prominent firm of cotton brokers by a jury of their own and my fellow-citizens. These results have been very gratifying to me, but I have the highest medical authority for the statement that the continued fight upon me has already considerably shortened my life. At the present time it is an accepted fact that a powerful organization is bent upon bringing about my retirement, by one means or another. Now I do not think the position I hold is worth the fight necessary to its retention, and the organization in question is welcome to whatever satisfaction it can derive from my withdrawal from the unequal struggle. If any of my friends think that I ought not to retire under fire, I would have them remember that there is never a time when I am not under fire. I have the honor, therefore, to tender you herewith my resignation of my appointment as statistician and chief of the Bureau of Statistics of this Department.

With much appreciation of the uniform courtesy and kindness you have shown me, and of the many tokens of confidence I have received from you, I am,

Most respectfully yours,

John Hyde.[133]

1905 Cotton Acreage Estimates Challenged

On the same day that John Hyde resigned the American Cotton Manufacturers' Association sent a telegram to the Secretary of Agriculture, James Wilson, asking for a conference with him regarding the cotton acreage report. It was evident from the telegram and from statements in the trade journal of that association, the *American Cotton Manufacturer,* that the cotton manufacturers of New England hoped the United States Department of Agriculture would not respond to the pressure of the cotton growers for a downward revision of the June cotton acreage estimates. Hyde's cotton acreage report for June 1905 had been challenged. The cotton growers were pressing for a downward revision of that 1905 cotton acreage estimate. The circumstances were these: The 1904 cotton crop had been a large one[134] and prices had been depressed. Congressman Leonidas F. Livingston, of Georgia, had wanted a revision of the estimate of the United States Department of Agriculture of December, 1904. A hearing before the Agricultural Committee of the House of Representatives of the United States Congress was held with Secretary James Wilson and John Hyde present, but no action was recommended.[135] The cotton growers had been campaigning to induce farmers to reduce cotton acreages planted in 1905 in the interest of higher

[133] *American Cotton Manufacturer* (Charlotte, N. C.), 3:11 (July 20, 1905).

[134] The U.S.D.A., *Crop Reporter,* 6:57, (December 1904), states, "Preliminary returns to the Chief of the Bureau of Statistics of the Department of Agriculture indicate a total production of cotton in the United States in the year 1904–05 amounting to 12,162,700 bales. . . . The estimate does not include linters." The Bureau of the Census reported a final total of 13,438,012 bales, excluding linters, for the year 1904. See "Cotton Production and Statistics of Cottonseed Products: 1905," U. S. Bureau of the Census, *Bulletin* 40 (Washington, 1906), Table 1, p. 5.

[135] U.S.D.A., *Crop Reporter,* 6:73–6 (January 1905).

cotton prices. On July 24, 1905, the committee of the American Cotton Manufacturers' Association were received by Secretary Wilson and Assistant Secretary Willet M. Hays. The latter's report of the meeting was quoted by the *American Cotton Manufacturer*:

The Department of Agriculture has determined that the statistical board shall meet Wednesday, July 26, to consider whether revision of the June cotton acreage should be made from existing data or from a new inspection, and to make public their findings or estimate at 12 o'clock on that date or the earliest convenient date thereafter.

As I understand, the committee came here to ascertain the facts with reference to the cotton situation and that the desires of the manufacturers are for making the government reports as stable as possible. The attitude of the committee with reference to the issue of a new report on acreage was neutral. I believe many of the manufacturers are owners of cotton and they are also buyers. They did not take sides. They presented no facts bearing on the scandal, and that subject was not considered.[136]

The Committee's object is to secure an accurate report, and one that will establish confidence. I have no hesitancy in saying this is what they will get.[137]

The accompanying editorial comment stated:

Very important was the suggestion, advanced by the visiting committee that the Department issue a weekly, in place of the monthly, report. The committee is unanimous in the opinion that the weekly report would help to prevent violent fluctuations in the price of cotton and would result in a steadier market.[138]

As indicated by Assistant Secretary Hays, the June cotton acreage report was revised and the results announced at noon July 26, 1905:

REVISED REPORT ON COTTON ACREAGE, July 26, 1905

The Crop-Estimating Board of the Department of Agriculture has considered the report issued by the Bureau of Statistics on June 2, relative to the acreage planted in cotton in the Southern States in 1905 as compared with that planted in 1904, and has concluded:

First. That a new estimate should be made on acreage planted, and that the figures in Mr. Hyde's hands when making his estimate should be used as the basis.

Second. That Mr. Hyde, with Mr. E. S. Holmes, Jr., at his elbow prompting him, made the estimate of reduction in acreage planted lower than the facts at his hand from the reports from the seven classes of reporters employed by the Bureau warranted.

Third. The Board finds, upon careful consideration of the reports of all classes of correspondents and agents, that the acreage planted in cotton this year, including the entire season, should have been estimated at 85.1 per cent of that planted last year, equivalent to a reduction in planted acreage as compared with last year of 14.9 per cent (instead of 11.4 per

[136] The "scandal" related to the action of E. S. Holmes, Jr., assistant statistician, in collaborating with a cotton speculator by furnishing him advance information. The story of that episode is not given in this book.

[137] Willet M. Hays, quoted in the *American Cotton Manufacturer*, 3:17 (July 27, 1905).

[138] *American Cotton Manufacturer*, 3:17.

cent), or 4,731,000 acres, the estimate of the total acreage planted this year being 26,999,000 acres.[139]

The effect of that announcement was stated as follows: "Immediately the new report reached the New York Cotton Exchange prices advanced seventeen points for October. A slight reaction came later. Trading was very active."[140] When the December 1905 production estimate was promulgated — on the basis of the revised acreage figures issued in July, indicating a crop of 10,167,818 bales,[141] a much smaller crop than in 1904 — the Hon. William C. Lovering, a Representative from Massachusetts and also a cotton manufacturer,[142] proposed a House joint resolution calling upon the Secretary of Agriculture to "proceed immediately to collect such data as may, in his opinion, be necessary for a more correct estimate of the season's crop, and to publish the same on the tenth day of January, nineteen hundred and six."[143]

At a hearing on December 19, 1905, Congressman Lovering spoke for the resolution, undertaking to establish the view that the December estimate was too low by comparing it with the ginners' reports gathered, up to that date, by the census. He gave figures for North and South Carolina, Georgia, and Oklahoma, but did not compare the estimates of the United States Department of Agriculture with the ginning figures for the whole Cotton Belt. Representatives of the cotton farmers and a manufacturer from North Carolina came to the defense of the December estimate of the United States Department of Agriculture, pointing out that the Department's figures were for 500-pound bales, whereas the census figures for December 1 were for running bales, which, it was claimed, were, in 1905, appreciably (probably as much as 50 pounds) lighter in the Carolinas; also that cotton picking was early in the states named and that the crop was practically all ginned by December 1. The Congressman from Massachusetts stated at the hearing that:

> The former statistician of the Department of Agriculture, Mr. John Hyde, is reported by the *Manchester Guardian* (Tuesday, December 5, 1905 [p. 11]) to have said that "there is not the slightest doubt that the correspondents of the Department have combined to mislead it, and that the actual crop will prove to be not far from 11,000,000 bales. The Department's correspondents always underestimate the crop, and this year the enormous influence of the Southern Cotton Growers' Association has been brought to bear upon them with the object of inducing them deliberately to misrepresent the actual condition."[144]

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[139] U.S.D.A., *Crop Reporter,* 7:34 (August 1905).
[140] *American Cotton Manufacturer,* 3:17 (July 27, 1905).
[141] The U.S.D.A., *Crop Reporter,* 7:63 (December 1905) states, "The Crop Reporting Board of the Bureau of Statistics of the Department of Agriculture finds, from the reports of the correspondents and agents of the Bureau, that the total production of cotton in the United States in the year 1905–06 will amount to 4,860,217,358 pounds (not including linters), equivalent to 10,167,818 bales of 500 pounds, gross weight."
[142] *Who Was Who in America,* 1897–1942 (Chicago: A. N. Marquis, 1942), p. 748.
[143] U. S. Congress, 59th Congress, 1st Session, 1905–06, Committee on Agriculture, *Hearing on House Joint Resolution 45,* directing the Secretary of Agriculture to furnish certain information concerning the cotton crop of the season of 1905 and 1906, Dec. 19, 1905 (Washington, 1906), p. 1.
[144] *Hearing,* p. 6.

The census figure for cotton produced in 1905, excluding linters, issued in March, 1906, as reported by the ginners, was 10,575,017 bales.[145] The December crop estimate of the Bureau of Statistics of 10,167,818 bales was 3.85 per cent (or 407,199 bales) below the census figures. John Hyde's long-distance estimate of 11,000,000 bales, as reported in the *Manchester Guardian,* was four per cent above the census figure.[146]

The Keep Commission

During the year 1905, while there was so much excitement regarding crop estimates, President Theodore Roosevelt requested the United States Committee on Department Methods to investigate the statistical work of the government.[147] The committee sent to the President, under date of Jan. 6, 1906, a document known as the Reports of the Keep Commission.[148] One of the questions looked into by the Keep Commission was the controversy between the United States Department of Agriculture and the Bureau of the Census on the subject of acreages of the various crops. It had long been recognized that the most vulnerable aspect of the estimate of the annual production of crops was the estimate of acres harvested. From the beginning, in 1863, the acreage estimates, made by the Department of Agriculture, had been based upon reports of percentage variation from the data presented in the previous census. John Hyde, Chief of the Division of Statistics of the United States Department of Agriculture from 1897 to 1905, had challenged as excessive the figures on acreages for 1899 as presented by the Twelfth Census. That led to a controversy.[149]

The character of Hyde's contention is indicated by the following paragraph in the report of the Committee of Inquiry of the National Board of Trade based upon a statement sent the committee by Hyde while their report was being prepared:

Features of inconsistency in the Census Bureau work are to be found in

[145] "Cotton Production and Statistics of Cottonseed Products: 1905," U. S. Bureau of the Census, *Bulletin* 40 (Washington, 1906), Table 1, p. 5.

[146] Later studies demonstrate that in years of active efforts to reduce acreages, downward bias is accentuated. Bias studies in the 1920's bear this out. Historical revisions published in 1933 give the acreage of cotton in 1905 at 9.8 per cent less than in 1904. See "Special Report on Revised Estimates of United States Cotton Acreage and Yield, 1866–1931," U. S. Department of Agriculture, Bureau of Agricultural Economics, Crop Reporting Board (mimeo.), May 10, 1933. See also U.S.D.A., *Yearbook,* 1934 (Washington, 1934), Table 111, p. 459.

[147] Members of the Committee on Department Methods were C. H. Keep (Chairman), Assistant Secretary of the Treasury; Lawrence O. Murray, Assistant Secretary, Department of Commerce and Labor; James Rudolph Garfield, Commissioner of Corporations, Department of Commerce and Labor; Gifford Pinchot, Chief of Division of Forestry, U. S. Department of Agriculture.

[148] U. S. Committee on Department Methods, "Reports of the Keep Commission," 59th Congress, 1st Session, 1905–6, *Senate Document 464* (Washington, May 29, 1906). This report, dated Jan. 6, 1906, was transmitted to the President by C. H. Keep, Chairman of the Committee on Department Methods, in compliance with the Senate Resolution No. 135 which requested the President "if not incompatible with the public interests, to transmit to the Senate the reports of the Keep Commission on Department Methods, relating to official crop statistics and the investigation of the Twelfth Census Report on Agriculture."

[149] The story of this unfortunate episode is told briefly by Nat C. Murray in an article entitled "A Close-Up View of the Development of Agricultural Statistics From 1900 to 1902," *Journal of Farm Economics,* 21:707–08 (November 1939). See also "Reports of the Keep Commission," pp. 21–26.

comparisons of area in instances where the agricultural returns make the farm areas equal to or exceed the land surface, according to survey records[150] as presented by the Twelfth Census. There appear many such instances. In twenty States, in which there are 1,490 counties, there are 101 counties made to appear as having farm lands equal to or in excess of the entire surveyed land surface. This number includes a few which by a small fraction of 1 per cent. are under 100 in the comparison, but which practically represent the entire land surface. The excesses over an equal extent of area range up to 40 per cent., the aggregate number of acres indicated in the farm returns for these 101 counties being 5 per cent. greater than their entire surface, without allowances for highways, towns, railroads, etc.[151]

Six months after Hyde had resigned, the fallacy of the implications of his attack was brought to light. L. G. Powers, Chief Statistician for agriculture in the Bureau of the Census from 1899 to 1912, who had felt the sting of Hyde's criticism, was in a position to assist the Keep Commission. That Commission reviewed the evidence relating to the controversy in the following terms:

As to the discrepancies in these figures, the Bureau of the Census has made the following statement, which we have verified, and to which we assent: In the case of 56 of the 102 counties a remeasurement shows that the farm area is not in excess of the total area. In 30 counties the differences between the total area and the farm area are clearly within the limits of the normal error. Seven of the remaining 16 counties are accounted for by the long-standing rule of successives censuses that the whole of a farm lying in two or more counties shall be credited to the county in which its manager resides. For example, in Merced County, Cal., there are included two ranches, with a total area of 782,000 acres, of which more than 600,000 acres lie outside of the county.

Finally, in nine of the counties errors of the enumerators or of clerks in the Census Office are admitted. But it is to be regretted that the census has never made public the one fundamental and conclusive fact, that the areas of counties published in Bulletin 57 were taken from planimeter measurements of the counties as shown on the best available maps, and that they were not the results of acual areal surveys, as the committee of the National Board of Trade mistakenly assumed. Such surveys are totally unavailable for county areas over considerable portions of the United States.

The method of measuring county areas by planimeter is open to three sources of error: First, to the normal error of the planimeter; second, to the much more important source of error which lies in the natural and inevitable fallibility of the hand in tracing boundary lines with the planimeter point; third, and most important of all, to the fact that the boundaries of counties on many of the best maps, especially in the Southern States, were in the census year, and still are, very inaccurate. . . .

. . . When it is known that the geographical county areas given in Bulletin 57 are from the very nature of their source necessarily inaccurate, the comparison between them and the total farm area reached by the census report on agriculture in each county is seen to be without significance, and it becomes evident that any criticism of the accuracy of the agricultural statistics

[150] It will be pointed out later that survey records were not available and that the county area records were faulty.

[151] National Board of Trade, *Proceedings*, 1903, p. 90.

of the census based on this comparison must fall to the ground. Nor do these omissions affect or explain the refusal of Mr. Hyde to accept the census figures of agricultural production and acreage as a basis for the future work of his Bureau. The geographical areas of counties were not at the time of his refusal, and are not now, used in any way whatever by the crop-reporting service [neither were total farm acreages used, but specific crop areas only]. . . .

. . . In nearly every case these sources of error were pointed out to the committee by the officers of the census at the hearings held by the committee at the Census Office, and their total effect, in the judgment of your committee, is decidedly insufficient to cast doubt on the agricultural statistics of the Twelfth Census. . . .

. . . the discrepancies between geographical and farm areas were not known to the committee [of the National Board of Trade] at the time of its sessions in Washington (September, 1902). These discrepancies were discovered by Mr. Hyde, worked out in detail by his clerks, and communicated by him to the committee of the National Board of Trade in October of the same year, while the report was in preparation.

No inquiry as to the discrepancies so discovered was made of the officers of the census by the committee of the National Board of Trade, nor as to the value of the inference drawn from them that the census returns of agricultural production were untrustworthy. This inference we have shown to be mistaken.

Discrepancies between the geographical and the farm areas of counties, such as are here discussed for the Twelfth Census, existed in the Eleventh Census also. For three and one-half years, including the time when these discrepancies were discovered and discussed, Mr. Hyde was in charge of the Division of Agriculture of the Eleventh Census. The conclusion appears to be inevitable that Mr. Hyde knew of these discrepancies in the Eleventh Census, and knew how they were caused, and was aware that they did not discredit the farm areas when he discovered similar discrepancies in the Twelfth.[152]

The Keep Commission gave special attention to the methods used in making the cotton crop estimates:

The Bureau of Statistics obtains the information upon which its estimates are made in the case of cotton from seven different sources:

First. From traveling field agents. . . .

Second. From State agents. . . .

Third. From local county correspondents. . . .

Fourth. From township correspondents. . . .

Fifth. From individual farmers, reporting each for his own farm directly and independently to Washington.

Sixth. From cotton ginners.

Seventh. From special correspondents, business men, country bankers, cotton brokers, and persons selected by the Bureau by reason of their supposed familiarity with cotton conditions in their respective localities. . . .

The first four classes of correspondents are called upon for information used as a basis for all the reports relating to acreage, condition, and yield of cotton. The individual farmers, ginners, and special correspondents are only

[152] "Reports of the Keep Commission," pp. 22–23, 26.

asked for reports in May and November; the reports which deal with acreage and yield. . . .[153]

The report then describes the methods used by the Board of crop estimates in evaluating the materials gathered from the various sources and continued:

> Great stress has been laid in the past on the number of persons from whom reports were obtained. In our judgment it does not add authority to the estimates of the cotton crop to state that information has been sought from 85,000 different people, of whom perhaps three-fourths have responded. The enormous number of correspondents rather raises a presumption against care in selecting them and genuine knowledge by the Bureau of the persons whose reports it receives. An inspection of the tabulated results, as laid before us in our investigation, leads us to the conclusion that nothing whatever is gained by this great number of correspondents. On the other hand, the sending out of blank forms to these persons, the receipt of the replies, and their careful tabulation involves an immense amount of labor and expense from which, in our judgment, there is no equivalent benefit received.
>
> It is altogether clear that the information principally relied upon by the board of crop estimates is the reports of the traveling field agents of the Bureau and the reports of the State agents. If these two sources of information agree, little attention is paid to divergent opinion on the part of the other correspondents. If these two disagree, the figure adopted is in almost every instance either the one or the other or lies between the two. The respective abilities of the State agents and the extent to which they have heard from their correspondents, also the reports of the traveling agents as to the completeness with which they have covered their territory, are taken into account. In other words, the Bureau relies upon the reports made to it from persons in its employ and to whom it pays salaries. These reports are much less affected by biased error and are made under a feeling of responsibility which the voluntary unpaid observer does not have.[154]

In commenting upon the method used in making crop estimates, the Keep Commission stated:

> The determination of acreage planted forms the basis for all estimates of probable crop based upon the condition of the growing plant. It is useless to know the condition of the plant except for the purpose of making an estimate of the probable total yield of the crop, and this can not be done unless the acreage planted is accurately determined.[155]

Statistical tables were presented showing the difference between the estimates of the Bureau of Statistics and the figures of the Census Bureau for cotton acreage for 1899, 1889, and 1879.[156] When taken for the United States cotton area as a whole, those figures looked relatively good, but when the figures were compared for individual states, the estimates of the United States Department of Agriculture ranged from 67 per cent to 121 per cent of the census figure. The Commission did not think well of the percentage method of estimating acreage. It recommended that the determination of acreage planted to cotton

[153] "Reports of the Keep Commission," pp. 3–4.
[154] "Reports of the Keep Commission," p. 5.
[155] "Reports of the Keep Commission," p. 6.
[156] "Reports of the Keep Commission," pp. 6–7.

be entrusted to the Bureau of the Census, and that the agents employed to secure reports from the ginners on the number of bales ginned be employed to secure annual statistics of cotton acreage in co-operation with the ginners.

> The plan would require the ginners to list their customers and record upon such list the number of acres of cotton planted by these customers just as they now record the number of bales of cotton ginned for such customers. . . . The Census Bureau believes that this field force could obtain through the ginners an accurate return of the cotton planted each spring, at a cost of not less than $60,000 nor more than $90,000 per year. . . .
>
> We are strongly of the opinion that until an improved method of arriving at the acreage planted is adopted, much inaccuracy must be expected in Government crop returns.[157]

With regard to the "condition reports" the Keep Commission suggested that the condition figure be translated into indicated number of bales.[158] The Commission recommended greater expenditure for state agents and traveling field agents and less expense in tabulating results of the estimates sent in by voluntary reporters:

> In our opinion no further information on the condition of the cotton plant should be sought by the Bureau of Statistics from the following classes of correspondents, viz., individual farmers, ginners, and township correspondents. The Bureau should rely solely on its paid traveling field agents and the paid State correspondents, and on one or possibly two other classes of correspondents whose figures might be used for checking or verifying the more useful and accurate sources of information. . . .
>
> . . . Every paid State agent should most assuredly be a cotton expert. He should be paid better compensation than he now receives. At present he is allowed nothing for traveling expenses, and he selects his correspondents about the State without personal contact. The selection of his agents by letter and seed distribution could not be expected to produce the best results. The State agent should be allowed traveling expenses, and should travel about the State and select his correspondents in every part after personal contact with the men selected and personal investigation of their qualifications made on the spot.
>
> . . . The State agents have never been called to Washington to receive personal instructions from the statistician in charge of the Bureau, nor has there been even a semblance of an investigation of the service. One qualified inspector covering the whole cotton territory could visit the various State agencies at least once a year, come into personal contact with the agents, see their methods, find out how they selected their correspondents, see that their correspondents were properly geographically distributed over their States, see that they understood perfectly the instructions of the Bureau, and form a better idea as to whether they were qualified for their work and whether their reports and returns were entitled to the confidence of the Bureau than could otherwise possibly be ascertained.
>
> Some of the money now used in tabulating the returns from the immense number of correspondents of unknown qualifications could well be expended

[157] "Reports of the Keep Commission," pp. 8–9.
[158] "Reports of the Keep Commission," pp. 12–13.

in increasing the compensation of the State agents and allowing them traveling expenses to move about the State, both in selecting their agents and in connection with observation of the growing crop. Whether the State agents should be required to devote their entire time to this work may perhaps be questioned, but during the crop-growing season they should devote a very considerable part of it to this work, and their compensation should be commensurate with the work required and with the character and attainments of the men to be appointed.

The State agents might well be brought together at periods, perhaps once in two years, in Washington, coming into personal contact with the official in charge of the Bureau of Statistics and interchanging ideas for the betterment of the service.

To the traveling field agents and a corps of trained State agents, with a well-organized service of correspondents reporting directly to them, there might be added to advantage one or possibly two other independent sources of information. The Bureau of Statistics should, we think, have one direct correspondent in each county, and such county correspondent should be required to have three or four sub-correspondents located in different parts of the county and reporting directly to him. The sub-correspondents and the county correspondents as well should be connected with the cotton trade, as producers or otherwise, as, in fact, should all the correspondents of the State agents.

Still another class of correspondents, known as "special correspondents," but greatly reduced in number by the process of discriminate selection, might also be retained to advantage, reporting directly to the Bureau of Statistics. These special correspondents are country bankers, people connected with agricultural experiment stations, cotton factors, and other persons coming into close contact with the cotton-growing business.

With these four classes of correspondents, altogether numbering only a small fraction of the number from whom reports are now received, the Department would be better equipped, in our opinion, to achieve results than it is at present. . . .

The recent attempts to organize the producers of cotton to induce them to decrease the acreage planted and to induce them to hold their cotton for a higher price have materially, though perhaps unconsciously, affected the returns made to the Bureau by the indiscriminate mass of its volunteer correspondents.[159]

Willet M. Hays in Charge of the Bureau of Statistics

After John Hyde left, July 18, 1905, Willet M. Hays was placed temporarily in charge of the Bureau of Statistics. By the end of a tempestuous year, Hays had improved the Bureau's methods and its reputation. How did he do it? What influences were at work? Since Hays was a pioneer farm economist, it is fortunate that he was in a position to prepare the report on the work of the Bureau of Statistics for the year 1905–06. Hays felt that "The producer should have as good a central crop reporting agency as the buyer."[160] With that goal in mind, "The Bureau of Statistics, acting as a disinterested

[159] "Reports of the Keep Commission," pp. 16–18.
[160] U.S.D.A., *Annual Reports,* 1905 (Washington, 1905), p. 406.

agency, has assumed the task of keeping the farmers, the dealers, and the users of farm products informed."[161] Hays continued:

The purposes of the Government's reports on acreage, condition, or quantity of agricultural products promised throughout the season and on quantity and prices of farm products actually produced may be enumerated as follows:

(1) To give information to producers, consumers, and dealers of actual yields; also to report the actual conditions indicating future yields.

(2) To enable market centers better to balance supply against demand in defining current prices warranted by natural conditions.

(3) To insure whatever stability of prices a changing state of natural conditions allows.

(4) To be so certainly authentic and so comprehensive and definite for entire crop areas that interested agencies can not well discredit nor warp the figures with their own estimates and thus make wrong prices and unstable markets.

(5) To enable producers to know the facts as to the promise of prices for their crops, that false reports may not mislead them into early sales at prices wrongly made too low.

(6) To create confidence that sales and consignments by producers may be made more freely; that dealers may more safely conduct their business with lower handling charges; and that manufacturers and other consumers may more freely purchase stocks to hold, thus adding certainty and stability to their business that they may work on a less speculative basis, and thus bring more equitable returns for labor and expenditure to all interested.

(7) To make reports so frequently and give facts so soon after changes in prospective conditions occur, or so soon after actual yields are harvested, that the least possible element of uncertainty or speculative condition may prevail to remove prices from their normal economic place.

(8) To give production by localities or crop areas and to give local market demands so that producers may know in which market to sell and so that buyers may know where to best secure supplies, thus to equalize prices and to avoid loss from very low prices, as in case of heavy production of bulky or perishable products.[162]

Crop Reporting Board Established, 1905

A major contribution made by Hays while he was in charge of the Bureau of Statistics was the establishment of a Crop Reporting Board (1905), a definite improvement over the former system of leaving final decisions to one man, the Chief Statistician. On that point Hays said:

For the purpose of checking up the results of the several sources of information and reducing the possibility of error to a minimum, the final results are made up by a crop-reporting board, composed of the Chief Statistician or Chief of the Bureau of Statistics, as chairman, and four individual members, made up of statisticians and officials in the Bureau and members of the special field service, called to Washington on report days for that purpose. Thus the plan is to select four members of this board each report day from an available corps of six or eight men well trained and thoroughly informed

[161] U.S.D.A., *Annual Reports,* 1905, p. 407.
[162] U.S.D.A., *Annual Reports,* 1905, pp. 407–08.

as to crop conditions and as to the relative value and correctness of the reports from the different corps of correspondents. This board, with several expert computers, meets on report days in the office of the Statistician, which is kept locked, no one being allowed to enter or leave it. All telephones are disconnected. . . .

Thus, when the final results obtained from the several corps of correspondents are assembled on report days, the Department's figures are determined by employing the judgment of several experts instead of a single individual. This has been generally accepted as a marked improvement in the crop-reporting service. . . .[163]

While the plan was for the Board, aside from the Chief Statistician, to be made up anew each month, it seems to have become the practice for the same two — the statistician in charge of the Division of Domestic Crop Reports and the statistician in charge of the Division of Foreign Markets — to be called continuously to serve on the Board.[164]

Hays was responsible for expanding the crop reporting as well as improving the quality of the work.

During the year the scope of this work has been very greatly broadened, the increase being approximately 100 per cent. Twenty-five crops not previously dealt with by the Bureau have been added, concerning which reports of condition are made from month to month. . . .

The special field service of the Bureau of Statistics, as well as the corps of State statistical agents, has been considerably strengthened, and the work of these employees has been placed upon a uniform, scientific basis, such as did not formerly prevail.[165]

Victor Olmsted, Statistician, 1906-1913

Hays carried the responsibilities of the Bureau of Statistics for nearly a year and then, in June 1906, he turned the work over to Victor Olmsted, who had been in immediate charge of the crop estimating work. Olmsted endeavored to make some improvement in the crop reporting work. The number of state statistical agents was expanded to 44, and, during 1909, those part-time employees were apparently for the first time given the means of seeing for themselves what was happening on the farms on which they were reporting.

During the year state statistical agents in important agricultural States were authorized to perform a limited amount of travel through the principal farming sections of their respective States, it having been found that their efficiency and work have been greatly benefited and strengthened thereby.

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[163] U.S.D.A., *Annual Reports*, 1905, pp. 411–12.

[164] See U. S. Department of Agriculture, *Yearbook*, 1907, p. 503, where the membership of the Crop Reporting Board is given as "Victor H. Olmsted, Charles C. Clark, Nat C. Murray, George K. Holmes, and one member selected from month to month from the corps of field agents and State statistical agents." In the U. S. Department of Agriculture, *Annual Reports*, 1908 (Washington, 1909), pp. 708–10, the names of those serving on the Board are given for each month from July 1907 to June 1908. There was rotation in the representation on the Board from the list of field and state agents, but no rotation in the three members of the Board from the Washington staff.

[165] U.S.D.A., *Annual Reports*, 1906 (Washington, 1907), p. 83.

Their journeys accomplished the purpose of giving them opportunities to personally observe and investigate agricultural conditions and incidentally to come into contact with many of their correspondents as well as to select and enlist new ones. When available funds permit, this class of agents will be authorized to travel hereafter more frequently and extensively than in the past.[166]

That statement is significant, indicating what state statisticians had not been doing in the 27 years previous, as well as indicating hope for the future. Meanwhile, the number of special field agents, who were full-time employees with funds for traveling, expanded from two in 1900[167] and four in 1902 to nineteen in 1909.[168] Some special agents were giving full time to one crop, such as cotton, tobacco, rice. Under the influence of Hays, one of those special agents spent six months collecting data regarding instruction in agriculture in rural schools.[169]

That the complex quadruple system of crop reporting was not giving full satisfaction was indicated in the report of 1910 where Olmsted spoke of

> . . . the urgent necessity for personal supervision, inspection, and instruction of state statistical agents and special field agents. [And stated that] With the beginning of the current fiscal year this work has been carried on in a systematic manner. Each state statistical agent and special field agent is visited by an official of the Bureau, who is thoroughly familiar with all requirements pertaining to the collection of information regarding crop acreages, conditions, and yields, and who possesses comprehensive knowledge of agricultural statistical methods; the agents' records and methods are carefully examined, and proper instructions given when necessary. These inspections have a stimulating influence upon the agents, and will certainly result in raising the standard of accuracy and efficiency of our salaried employees whose duties are performed away from Washington.[170]

The following year Olmsted reported:

> The assistant statistician [Samual A. Jones] is particularly concerned with the inspection, supervision, and instruction of the field service of the bureau. This is a vitally necessary work, because upon the efficiency of these agents, as reflected in their reports to the bureau, depends largely the accuracy of the Government crop reports.[171]

That was a first step toward co-ordinating the system of gathering data on which the crop reports were based.

In the earlier years J. R. Dodge continually resisted the pressure to express the "condition" reports in terms of bushels or pounds. He said that when the seed had just sprouted there were no bushels to report:

> There are no bushels of corn in a field just sprouting, and it is a misnomer to call first growth a final product. It is the result of characteristic American haste thus to discount the experiences and accidents of the whole season,

[166] U.S.D.A., *Annual Reports,* 1909 (Washington, 1910), p. 660.
[167] U.S.D.A., *Yearbook,* 1900 (Washington, 1901), p. 73.
[168] U.S.D.A., *Annual Reports,* 1909, p. 659.
[169] U.S.D.A., *Annual Reports,* 1909, p. 659.
[170] U.S.D.A., *Annual Reports,* 1910, p. 700.
[171] U.S.D.A., *Annual Reports,* 1911, p. 643.

and say that three inches of potato-vine above the surface means 90 bushels of potatoes per acre. Absurd blunders in crop-report reading have often been made in that way. . . .

It is true that the public want to know what these reports of early growth indicate. It may be proper to gratify this public anxiety, if it is understood that the expected result is subject to the limitations and contingencies of the future.[172]

But those who advocated quantitative figures were gaining ground, and finally, under the caption "Plans for the Year Ending June 30, 1911," Olmsted said:

Another feature is contemplated, namely, quantitative interpretations of crop-condition estimates of important crops, made by the Crop Reporting Board, from month to month, during the growing season; that is, the figures representing the condition of each growing crop dealt with will be promulgated monthly, as in the past, and in addition, the quantity or volume of the year's final production, as indicated by the condition figures, will be stated, thus enabling all interested in our reports to realize their full import and meaning.[173]

In his report dated September 12, 1911, for the year ending June 30, 1911, Olmsted reported that the step had been taken:

An important feature was added to the crop-reporting system of the bureau . . . to wit, the quantitative interpretation of the figures indicating the condition of growing crops for which quantitative estimates are made at the close of each year. The significance of the condition figures from month to month of the growing crops involved have been shown by their translation or interpretations into figures indicating the yield of such crops as promised by the condition reports.[174]

In writing of that change, Nat C. Murray said:

Private statisticians had for many years given their own quantitative interpretations of the government percentage condition figures, using different methods with different results. Why should not the government interpret its own figures? When I asked the secretary, James Wilson, for approval to make such interpretations, or "forecasts" as they are now generally called, he said in effect: "All right but try it out on grain before you touch cotton; because cotton is dynamite."[175]

Secretary David F. Houston did much to further develop the work in crop estimating. His first report recommended "That the name of the Bureau of Statistics be changed to the Bureau of Agricultural Forecasts, as indicating more clearly the nature of its work."[176] The next step, characteristic of Houston's administration,

[172] U. S. Commissioner of Agriculture, *Report,* 1884 (Washington, 1884), p. 421.

[173] U.S.D.A., *Annual Reports,* 1910 (Washington, 1911), p. 699. See also U.S.D.A., *Yearbook,* 1910 (Washington, 1911), p. 135.

[174] U.S.D.A., *Annual Reports,* 1911 (Washington, 1912), p. 639.

[175] N. C. Murray, "A Close-Up View of the Development of Agricultural Statistics From 1900 to 1920," *Journal of Farm Economics,* 21:715–16 (November 1939).

Quantitative forecasts for ten crops (other than cotton) *in percentages* of the previous crops are in the *Crop Reporter,* 13:41 (June 14, 1911). Quantitative forecasts, in bushels or pounds, are shown in the *Crop Reporter,* 14:41 (June 1912). For cotton a quantitative forecast (prior to December) was issued October 16, 1914, in the "Agricultural Outlook," U.S.D.A., *Farmers' Bulletin* 629 (Washington, 1914).

[176] U.S.D.A., *Annual Reports,* 1913, pp. 13, 59.

was the appointment of a committee to make recommendations with respect to reorganizing the Bureau of Statistics.

With a view to improving the crop reporting service, a committee was appointed at the beginning of the fiscal year composed of Milton Whitney, Chief of the Bureau of Soils, J. L Coulter, expert in charge of the Division of Agricultural Statistics of the Bureau of the Census, C. W. Thompson, economist in the Rural Organization Service, Leon M. Estabrook, Chief Clerk of the Department, and W. J. Spillman, Chief of the Office of Farm Management, to study the organization and methods of the Bureau of Statistics and of other branches of the Government service charged with the duty of collecting and compiling information with respect to agricultural products. This committee made an exhaustive study of the subject and submitted its report and recommendations, which were approved. The recommendations may be summarized as follows:

(1) The functions of the reorganized bureau should be to collect and compile, abstract, analyze, summarize, and interpret data relating to agricultural industries, and to make and publish periodically crop and livestock forecasts and estimates, including acreage, yield, and the value of farm crops, in cooperation with other bureaus and offices of the Department of Agriculture and the statistical agencies of other branches of the National and State Governments.

(2) A change of title from "Bureau of Statistics" to "Bureau of Crop Estimates. . . ."[177]

Thus it would seem that the original economic bureau — The Bureau of Statistics — was to become simply a Bureau of Crop Estimates. In the meantime a Bureau of Markets was in the making to take over the marketing work, and the Office of Farm Management was taking over the cost of production and farm management work of the Division of Production and Distribution of the Bureau of Statistics.

Estabrook and Murray, 1913-1922

Victor H. Olmsted, Chief of the Bureau of Statistics, left the service in the spring of 1913 at the request of Beverly T. Galloway, who became Assistant Secretary of Agriculture on March 4, 1913. Nat C. Murray served as Acting Chief and prepared the annual report of the Bureau of Statistics for the year ending June 30, 1913. Leon M. Estabrook was made Chief of the Bureau of Statistics[178] in September 1913 and continued in that position until 1921. Of the occasion for the retirement of Olmsted and the appointment of Estabrook, Nat C. Murray has given the following brief statement:

When Woodrow Wilson became President and David Houston, Secretary of Agriculture, on March 4, 1913, B. T. Galloway became Assistant Secretary of Agriculture, largely in charge of the internal affairs of the Department.

[177] U.S.D.A., *Annual Reports,* 1914, pp. 234–35.
[178] "The title *Bureau of Crop Estimates* was assumed on July 1, 1914." See U.S.D.A., *Annual Reports,* 1915 (Washington, 1916), p. 275.

Mr. Galloway was previously Chief of the Bureau of Plant Industry. While James Wilson was Secretary of Agriculture, there were weekly meetings of the Bureau chiefs in his office. In these meetings friction was apparent between Mr. Galloway and Mr. Olmsted. About a month or so after Mr. Galloway had become Assistant Secretary, he sent a note to Mr. Olmsted notifying him that he was thereby suspended as Chief of Bureau and that I was to serve as Acting Chief, pending an investigation of the affairs of the Bureau. A semblance of an investigation was made, but no important irregularities were disclosed.

After several months Mr. Galloway called me to his office and asked me what, if any, changes I would suggest if I were permanently in charge of the Bureau. I outlined my ideas, and was requested to put them in writing. This I did,[179] and the plan of reorganization was approved. The main part of the plan was the abolishment of the part-time position of the state statistical agent, and of the special field agent; and in their place the appointment for each state, a full-time statistical agent, under the classified civil service, who should combine the duties of the two positions abolished. . . .

A few days after Mr. Galloway approved the plan of reorganization, he again called me to his office, and after a little pleasant chat, said: "Mr. Murray, you have been Acting Chief for some time; how would you like to have it made permanent?" To which I replied: "Mr. Galloway, if the offer came under different conditions it would be acceptable; but I believe that an injustice is being done to Mr. Olmsted." To this he straightened up and almost in anger said: "If that is the way you feel about it I have nothing more to say." A few days later the announcement was made that Leon Estabrook was appointed Chief of the Bureau of Crop Estimates [i.e., Bureau of Statistics]. (He was formerly Mr. Galloway's secretary.) The selection of Mr. Estabrook proved fortunate for the Bureau. He was an able administrator; I had no liking for administration. Within a few months he and I worked in the closest harmony, doing perfect team work.[180]

During the next year the principal recommendation of the special committee on reorganization and the recommendations made to Assistant Secretary Galloway by Nat C. Murray were effectuated. Under the reorganized Bureau (1914)[181] special attention was given to securing better qualified persons as field agents. Furthermore, efforts were made to improve the personnel through in-service training. Regarding the new personnel program, L. M. Estabrook said:

In July, 1914, the title of the Bureau [of Statistics] was changed to the Bureau of Crop Estimates, in order to indicate to the public more clearly the real nature of its work. Civil Service examinations were held in all the States, and from the list of eligibles thus secured new Field Agents were appointed in many of the States. The former District Special Agents were already in the classified service and they were assigned to States within their former districts. On June 30, 1914, the appointments of all the State Statistical Agents were terminated.[182]

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[179] Report to the Assistant Secretary of Agriculture, dated July 16, 1913, signed by Nat C. Murray, Acting Chief of Bureau, now [1949] filed in the National Archives, Washington, D.C.

[180] Murray, "A Close-Up View of the Development of Agricultural Statistics From 1900 to 1920," pp. 716–17.

[181] The Bureau of Statistics was reorganized and its name changed to Bureau of Crop Estimates, July, 1914. U.S.D.A., Bureau of Crop Estimates, *Report of the Chief,* 1919 (Washington, 1920), p. 325.

[182] L. M. Estabrook, "Opening Address," U.S.D.A., Bureau of Crop Estimates, *Proceedings of Meetings of the Field Agents, Crop Specialists and Administrative Officials of the Bureau of Crop Estimates,* Jan. 22–27, 1917 (mimeo.), p. 1–B.

In the three years, 1914–16, the number of field agents and crop specialists increased from 21 to 52.[183] The part-time state agents had disappeared. In addition to carefully selecting personnel for the crop estimating service, Estabrook and Murray did much to train the men for better service. A conference of district special agents was called in January, 1914, and a conference of field agents in January, 1917, for the purpose of improving the quality of the field work. At the 1917 meeting high personnel standards were emphasized, and methods were discussed with attention directed particularly to considering crop acreage, livestock numbers on January 1, and monthly condition reports. Estabrook, in addressing the meeting of field agents, was clear-cut in insisting that high standards must be maintained:

> It was and is the desire of the Bureau to appoint as Field Agents and Crop Specialists only men who have had practical experience in farming, men of mature years, men well educated in the fundamental principles of agriculture and statistics, men of the highest character and ability who would command the respect and be able to secure the cooperation of all State and local officials and prominent farmers in their States. We hope that by obtaining thoroughly competent men, trained in agricultural and statistical methods, who can themselves inspect and judge crop conditions, in the course of time we could expect them to obtain more accurate data and in greater detail than has ever been available. We would also expect that as these well qualified Agents become familiar with crop conditions and with the people of their States, and as they gradually accumulated data for every part of their States, they would come to be recognized as the leading authorities on agricultural production in their States. This has been our theory in the past and it is our hope for the future. . . .
>
> Just as we expect the Field Agents to become the recognized authorities on crop production in their respective States, so we expect the Crop Specialists to become recognized as leading authorities on the production of their special crops. . . .
>
> The next plan we have in mind is to urge upon Congress the desirability of furnishing each Field Agent with a clerk to attend to routine correspondence, look after the mail during the absence of the Field Agent, and to assist him in the preparation of his monthly report.[184]

To illustrate what Estabrook, Holmes, and Murray were striving for, we shall note how one of the new field agents, W. F. Callander, proceeded when he took up the work in Wisconsin in 1914:

> One of the first pieces of office work of any size which I undertook after being appointed a field agent was to tabulate all of the available data regarding the crops grown in Wisconsin from the Crop Reports of the Bureau as far back as 1899 when the next to the last census was taken. These tabulations I made upon small sheets which would fit into a pocket memorandum book in order that I might have it with me all the time in the field. In this tabulation I showed the relative acreage, that is, the acreage compared to the previous year, the total preliminary acreage and the final estimate of acreage, the percentage of acreage abandoned in the case of field sown crops, the acreage reported by the assessors, the condition from month to month, average

[183] *Proceedings*, p. 1-B.
[184] *Proceedings*, pp. 1-B – 1-D.

yield, etc. In my work I have found these records very valuable, especially when considered in connection with the weather records, which I have also tabulated for a number of years back. An examination of the relation between rainfall and crop conditions and yields shows a marked correlation, and by having these two records side by side and knowing the rainfall for a given month, a number of times I have been able to estimate the condition quite closely — experimentally of course. One of the first things I do at the beginning of each month is to tabulate the weather reports from the various stations in order to determine the average rainfall and mean temperature for the State. In addition to this record, the Weather Bureau Office at Milwaukee during last season furnished me at the beginning of every month the record of rainfall by weeks at about forty of the cooperative Weather Bureau Stations as well as at the regular stations. These records were of great help in interpretating reports which showed unusual conditions.

For the agent rather new at the business of crop estimating, I consider these records for the State as almost invaluable. With them as a guide he is able to form a more intelligent estimate for they furnish a kind of guide or standard to judge by, and they keep him from getting off the track too far. . . .[185]

Another statement made by Callander at the same meeting in January, 1917, further indicates the eagerness for truth, the native intelligence, the purposefulness, and the untiring energy of the field agent who was assigned to Wisconsin in 1914. Under the title of his remarks "Travel — on Foot," Callander said:

There are times, I believe, when the field agent can with advantage and at a considerable saving of expense, make short trips of inspection on foot. On a walking trip one is not confined to fields along the road but is able to strike out across the country and in so doing will meet men working in the fields whom it would not be possible, or at least convenient to interview, if the trip was being made by automobile or otherwise. But unless conditions are right and there is plenty of time at one's disposal, I would not advocate using "shank's mare" as a mode of conveyance.[186]

Having quoted passages from papers given at that 1917 conference showing the emphasis placed on high quality of personnel, another group of quotations will illustrate the thinking about problems of estimating acreage to which more attention was given than to any other one subject. In his opening address Estabrook said:

Of especial importance is the question of estimating acreage and numbers of live stock and I can not too strongly urge upon you the necessity for devoting a large share of your time and attention to these two subjects. . . . Our better organization and service may result in a closer approximation to the totals of the next census, and that following the census the Bureau can avoid serious deviation from the facts with respect to acreage, production and numbers of live stock.[187]

Nat Murray emphasized the fact that, in acreage estimates in terms of percentage increase or decrease of area devoted to a given

[185] W. F. Callander, "Past Records," in *Proceedings*, p. 62-A.
[186] W. F. Callander, "Travel — on Foot," in *Proceedings*, p. 40.
[187] Estabrook, "Opening Address," in *Proceedings*, p. 1-E.

crop in a given year, when compared with the previous year, bias is cumulative in effect. He said:

. . . in making the final estimates last December the Bureau attacked the problem in several different ways. Assessors figures were consulted wherever available. Comparisons with the reports of "usual" acreage were made. Individual farm reports of actual acreage in 1916 and 1915 were consulted. The relation between the acreage of one crop and the acreage of others was calculated. An inquiry was made among reporters as to the proportion of total crop area devoted to different crops. No single method of ascertaining acreage is without some defect. This composite method of estimating acreage is far from being perfected. The Field Agent, with his intimate knowledge of his State, is better able to analyze the various data and account for or harmonize differences than is the Statistician at Washington. Therefore it is contemplated that during the present year the Statistician will confer with each Agent individually, and go over with him the various data and the method of coming to a final acreage estimate.[188]

Another speaker, J. J. Darg, said:

One of the most reliable sources of information regarding acreage and condition is to be had from farmers — wide awake, practical farmers who follow up-to-date farming. Especially is this true where rotation of crops is followed. Where rotation of crops is followed there is but little change in the acreage from one year to another, and the Agent in whose territory rotation is followed is lucky, as he is not handicapped by a large increase or decrease in the acreage one year compared with the previous year.[189]

The idea of counting fields was brought forward by B. B. Hare, who said one method is to:

. . . Count all cultivated fields on one side of railroad throughout itinerary, by crops. . . . The data of course will be of little value the first year except to give a fair idea as to the proportionate acreage one crop bears to another and to the total cultivated area, but they afford an excellent check as to increase or decrease of acreages when compared with corresponding data in succeeding years.[190]

J. E. Woodworth spoke of the relation of the acreage of the major staple crop or crops to the acreage of other crops:

The question of comparing the acreages of all cultivated crops within a given area is of material importance, as a check if nothing else, in those sections where there are radical changes in the acreage of any of the major or minor crops. In any well settled country, the total acreage under cultivation, conditions being fairly normal, is almost a fixed quantity. . . .

The relation of the acreage of one class of crops with that of another group is especially worthy of consideration in sections where crops are greatly diversified. . . .[191]

F. L. Kent reported from Oregon:

Our investigations . . . indicate that in localities where some one particular crop greatly predominates, a change in total crop acreage will bring

[188] N. C. Murray, "Preparation of Bureau Estimates," in *Proceedings,* pp. 8-D — 8-F.
[189] J. J. Darg, "Sources and Relative Value of Crop Data," in *Proceedings,* p. 29-A.
[190] B. B. Hare, "Special Methods of Ascertaining Acreages," in *Proceedings,* pp. 47-A — 47-B.
[191] J. E. Woodworth, "Relation of the Acreage of the Major Staple Crop or Crops to the Acreage of Other Crops," in *Proceedings,* p. 48-A.

about a similar change in the acreage of the major crop, and if we can arrive at the change in total acreage, through county assessor's figures or otherwise, we should have a fairly accurate figure to apply to our major crop.[192]

In 1917 the field agents were beginning to test methods of checking percentage estimates of increase or decrease in acreage of a given crop as sent in by the correspondents. Further progress along that line will be noted as the story unfolds.

At that same meeting it was recognized that estimating livestock numbers presented a difficult problem to the Bureau. As in the case of acreage, the number of livestock on January first of each year had long been estimated in terms of percentage increase or decrease as compared with the previous year. The starting point was the decennial census figures. That estimate was subject to a cumulative bias which in ten years might throw the estimate wide of the mark.

Since that day the problem has been met by new methods of collecting and classifying the data.

CONDITION REPORTS

Condition reports and yields per acre were also considered by that 1917 conference. In a statement to the field agents, Nat C. Murray said:

> Most of the investigations made by the Bureau relate to acreage, to condition, or to yield per acre. Of these, the question of condition expressed by percentage gives the least difficulty to the Bureau but is most puzzling to new Agents and to persons who have not had personal experience in collecting such information. . . .
>
> The reason for the doubt or questioning as to the percentage condition figures is the apparent vagueness of the basis, or the so-called normal. If there is no agreement or common understanding among reporters as to what is a normal, of what value is their average? The answer is that the value is in the comparison of such average with the average of the reports made by the same reporters at previous dates. . . .
>
> Now when the Statistician is considering what to make the official estimate of the condition of a crop in any State, he examines the averages from the different sources, namely, Field, county, township, and sometimes Special. If there is a close range between them, as 67, 68, 68, he is likely to accept without much further examination the majority figure, as 68. If the range be wide, as 75, 68, 65, an examination of the reports of the preceding month is made; if two classes show a decline and one a rise, there is a presumption that the one indicating a rise is faulty, although this does not necessarily follow. Next an examination is made of the changes in adjacent States; if they also show a decline, the presumption that the figure indicating an improvement is faulty is strengthened. The comments are reread to learn if they might give a reason for such difference. The weather reports are read to learn what influence weather conditions have had. Comparisons are also made with the figures of some other crops which might have approximately the same condition as the crop under consideration. And thus, by an accumulation of evi-

[192] F. L. Kent, "Relation of Total Acreage to Acreage of Particular Crops, and Relation of Increase or Decrease in One Crop to Decrease or Increase in Another," in *Proceedings*, p. 49-B.

dence, the Statistician, or Board, sitting as a jury as it were, decides upon a final estimate. By such method, a figure of one of the three or more classes of reports is sometimes disregarded entirely. Sometimes when there is a little doubt as to the probable figure, "the benefit of the doubt" is given in the direction of the radical figure.

When agents' comments or weather reports indicate that conditions on or about the first of the month have an improving tendency, the benefit of doubt is thrown to a higher figure. On the other hand, if conditions are declining, the benefit of the doubt is given to the lower figure.

The subject of bias is an important one in crop reporting, but it does not cause much difficulty in condition reports. This is because condition figures are of comparative value only, and the bias in the one set or average is neutralized by a similar bias in the set or average used in comparison. . . .

In determining the Bureau's condition estimates, the Statistician and the Crop Reporting Board must always keep in mind that condition figures are index figures, to be used as a basis of forecasting yields; that there should be a uniform ratio between the condition figure and the yield per acre indicated. . . .

In determining the yield per acre the Bureau is depending more and more upon the Field Agents' reports. Bias in yield estimates is not cumulative. . . . There is probably a slight biased underestimate in the yield per acre estimates of county and township reports . . . the Bureau gets its averages . . . from estimates for a community.[193]

By taking the correspondents' condition figures as they came in, month after month and year after year, evaluating them in terms of the final production through a series of years, the statistician of the Bureau of Crop Estimates secured a valuable indicator of the probable final yield which could be predicted on the basis of reports of the condition of a given crop, from month to month, while growing. It was a method worked out by experience. The terminology might seem mixed and confusing to an outsider, but the reports, because of their comparative value, proved useful, a point which had so often been emphasized by C. B. Murray, father of Nat C. Murray, in his statements to members of the National Board of Trade.

TRAINED FIELD AGENTS

In making an appraisal in 1919 of the reorganization of the Bureau in 1914, Estabrook said:

> The most important change involved in the reorganization of the bureau and the one which resulted in greatest improvement in the crop-reporting service was the appointment of trained field agents, one for each State or group of smaller States . . . who travel over their States monthly during the crop season, personally observing and inspecting crops, interviewing the best informed men and enlisting their active cooperation in observing and reporting upon conditions for the monthly crop reports.[194]

Of further progress in integrating the system of crop estimating, Estabrook continued:

> During the fiscal year just closed cooperative agreements were entered into between the Bureau of Crop Estimates and the State departments of

[193] Nat C. Murray, "Preparation of Bureau Estimates," in *Proceedings*, pp. 8-C–8-E.
[194] U.S.D.A., *Annual Reports*, 1919 (Washington, 1920), p. 325.

agriculture of Arkansas, Georgia, Alabama, North Carolina, West Virginia, Illinois, Iowa, Oklahoma, and Idaho. These agreements provided for pooling the crop reporting resources of the two organizations and the issuance of a single cooperative monthly State crop report in order to avoid unnecessary duplication of work and expense and to improve the service. . . .

In a number of States the efficiency and value of assessors in collecting agricultural data of fundamental importance in crop and live-stock estimating, such as acreages planted to different crops and the number of live stock of different classes on all farms within the State, has been fully demonstrated, notably in Wisconsin, Ohio, Nebraska, Iowa, Kansas, and Missouri.[195]

Estabrook and Murray carried on their work along those lines in great harmony, supplementing each other in a fortunate manner.

Secretary Houston's appreciation of statistical work is indicated in his report for the year ending June 30, 1919 (his last report) in which he said:

> Accurate and complete statistics are prerequisite to the satisfactory consideration of any problem. They are of overwhelming importance to the millions of people interested in rural life, and especially those charged with the responsibility of aiding, by legislative and administrative processes, the successful development of our great agricultural industry. Suggestions as to the direction of production and plans to improve marketing and distribution wait upon them, and in any national crisis they are essential to the intelligent handling of the Nation's food problems.[196]

Edwin T. Meredith

While Edwin T. Meredith was Secretary of Agriculture (January, 1920–March 4, 1921), he took upon himself the task of selling the United States Department of Agriculture to the public. An example of his work in that line is found in a reply to questions raised by an Oklahoma farmer who had expressed some doubt as to the value of the crop and livestock estimating service.

BENEFIT FARMERS

Your first question is "What benefit does the farmer receive from the monthly crop report?" Farmers are benefited directly and indirectly. Because the reports cover crop and live stock conditions, present and prospective supply, for all States, and because they are unbiased, disinterested, and as nearly accurate as it is practicable to make them, farmers can use the information they contain as a guide to planting and marketing; that is, by observing whether the indicated supply is or will be relatively large or small as compared with previous years the farmer can decide intelligently whether to increase or decrease the acreage in a particular crop, and whether to sell his harvested crop immediately or hold for a probable advance in price at a later date. . . .

Indirectly the monthly crop reports benefit farmers in many ways. For instance, all banking institutions study the Government estimates of crop acreages and prospects and the live-stock estimates as a guide to the amount of funds that will be required, and which they will be called upon to advance for financing farmers through the crop season, as well as the movement of

[195] U.S.D.A., *Annual Reports*, 1919, pp. 328–29.
[196] U.S.D.A., *Annual Reports*, 1919, pp. 29–30.

crops after harvest. Railroads use the crop reports as a guide in arranging to supply cars when and where needed for moving crops and live stock, so far as cars are available for that purpose. Manufacturers, merchants, dealers, and business men are all interested in the crop report, because it enables them to plan their operations far enough in advance so that the machinery, farm equipment, and supplies which farmers will require can be supplied when and where needed, thereby avoiding costly and annoying delays; and to the extent that business men avoid losses they can afford to sell at reduced prices, which benefits farmers as well as other customers.

Crop reports are of fundamental importance to all marketing and distributing agencies, and to the extent that the risk involved in buying farm products and carrying them in storage until needed is reduced, legitimate buyers can operate on smaller margins, and therefore, in competition with each other, they can afford to pay higher prices to farmers. . . . It should be remembered, also, that the data regarding acreages, numbers of live stock, and total production by States, and for the United States, collected and published by the Bureau of Crop Estimates, afford the only dependable information of this character which is available between the 10-year censuses, and this information helps farmers by advertising the actual resources of their States, as well as by giving them current information as a guide to planting and marketing operations. . . .

HELP STABILIZE PRICES

You further express the opinion that the monthly crop reports play directly into the hands of the speculators. As a matter of fact, the contrary is true. Speculation thrives and depends upon lack of information, uncertainty, and confusion on the part of farmers and the public. Crops and live stock are grown in the open and can not be hid. Speculators have their own means of getting information and no one can prevent them. Speculators get information all the time, by letter and by telegraph, through traveling salesmen, local buyers and dealers, country merchants and bankers, through crop experts employed by them at high salaries, and through various private crop reporting agencies. Were it not for the Bureau of Crop Estimates, which is a disinterested Federal agency through which farmers can pool information regarding local conditions and have it summarized by the bureau into an accurate report for the whole country, farmers and the public would be at the mercy of speculators who would be free to issue any sort of misleading reports designed to influence prices to their own advantage, and farmers would have no means of checking them up. The crop reports injure no one but the speculators, who could well afford to pay many times the entire cost of the bureau to have the Government crop reports discontinued or discredited. In fact, the only influential request received by the department from any source in recent years for the suppression of the crop report came from one of the largest speculative exchanges in the country. . . .

Farmers should realize that the prices of their products are determined largely by the relative supply, because the demand remains fairly constant, and that the law of supply and demand which determines or influences these prices is not limited to any particular county or State, but is nation-wide, and for some crops world-wide. Regardless of what is grown in your own county, or even in your own State, the price you get for what you have to sell will depend largely upon what is produced by farmers in other States and countries; and before you can decide intelligently whether it will pay you to grow more or less cotton, or corn, or any other crop, or whether to sell your crop or live stock now or to hold it until later on, you must know something about the relative supply produced in other States and countries. It is this

information which the Government crop reports supply more accurately and more dependably than any other agency, and it is this sort of information which farmers must learn to use, as it will help them to make their business profitable.[197]

That statement summarized the arguments in favor of crop estimates which had been maintained by the officials in Washington since the day when Ellsworth issued his estimate for the crop of 1841.

Crop Estimates, Bureau of Agricultural Economics

In July, 1921, the Bureau of Crop Estimates was merged into the administrative unit which one year later (July, 1922) was formally and legally established as the Bureau of Agricultural Economics, under the leadership of Henry C. Taylor as Chief of the new Bureau and Leon M. Estabrook as Associate Chief.

Certain phases of the work of the Bureau of Crop Estimates — which had been evolving since 1863 — were merged with other divisions, while the specific crop and livestock estimating work was continued in the new Bureau under the title of The Division of Crop Estimates, with Nat C. Murray as Head of the Division.

As Associate Chief in the consolidated bureau, L. M. Estabrook gave special attention to the statistical work and served as chairman of the crop reporting board. The regrouping of the work was followed by renewed efforts to extend and improve it. In September, 1921, W. F. Callander was sent to Europe to study the crop reporting systems of practically all the countries west of Russia.

But as had been true in the previous 25 years, critical attacks upon the crop estimating work soon came to the attention of the chief of the bureau. The cotton crop estimates for 1921 were far out of line. This was due to the fact that the acreage estimates, on which everything else was based, were too low. It was believed that this was true in part because of an unusual bias on the part of the reporters, due, in turn, it was afterwards assumed, to a campaign in the spring of 1921 to reduce the cotton acreage.

Low prices paid for the 1920 crop made a reduction of acreage desirable from the producers' point of view, and apparently the crop reporters allowed this condition and the crop reduction campaign to swing them much out of line. The standard bias becomes an historical fact after a series of years of reporting and checking the final results. This bias factor, when kown, is easily applied, but extraordinary bias must be checked at once if results are to be reliable. This checking had in other years been done by the state statisticians, but the appropriations for crop estimates had been so cut that funds were not available for traveling expenses and as a

[197] "Crop Reports Benefit Whole Country . . .," U.S.D.A., *Weekly News Letter*, 7:5–6 (June 16, 1920), quoting letter by Edwin T. Meredith.

result adequate checking was not done and the cotton reports were admittedly bad. The crop reporting board, therefore, came in for an extraordinary amount of criticism.

The fact that part of the blame could be handed on to Congress for not having appropriated adequate funds was of little help. Obviously, self-help was the only real hope. Having asked Congress to provide funds for the crop estimating work for the next year on a basis that would enable the state statisticians to do the necessary traveling to keep in touch with the crop situation and check any extraordinary bias on the part of the reporters, the statisticians turned their attention to the development of new methods of securing data and checking reports with the hope of putting the statistical work on a more accurate basis.

Stimulated by a desire to improve the methods of crop estimating, as well as by the possibility of an expensive Congressional investigation, a committee of three expert statisticians[198] was called to Washington to study the methods used in making crop estimates and to make suggestions for possible improvements.

While the members of the committee of outside experts made no suggestions of absolutely new methods to try out, their presence was valuable in other ways. They assured the younger members of the staff of the great importance of testing and, so far as possible, perfecting the methods of collecting and interpreting sample data from individual farmers. Their criticisms and suggestions for modifications were most helpful. During their first visit the committee listened to detailed presentations by the crop estimating staff of the methods which were in use and the new methods on which they were experimenting but which had not yet been used in making or checking estimates. A few weeks later the committee was asked to return to make suggestions for improving the work.

The first suggestion was that more thorough analysis be made of sample data or specific individual reports of farmers who gave their own acreage, for example, for the previous year and for the current year. Specific statements, it was thought, would be subject to less bias than generalized reports made by one man concerning the percentage of increase or decrease in the acreage of a given crop in the region, whether a township or a county. Such samples had been gathered for some years, but the results had not been given much weight in preparing acreage estimates. It was agreed that as soon as lists of reporters could be built up and methods of interpretation developed, specific reports should be secured in adequate numbers to make a fair sample and be used as one of the means of determining the acreage of crops.

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[198] Carroll W. Doten, of the Massachusetts Institute of Technology and ex-president of the American Statistical Association; Willford I. King, of the National Bureau of Economic Research of New York City; and Warren M. Persons, of Harvard University. See U.S.D.A., Bureau of Markets and Crop Estimates, *Report of the Chief*, 1922 (Washington, 1922), p. 27.

The second important suggestion of the committee was the more extensive use of the counting of telephone poles while passing through a cotton state, a corn state, or a wheat state, noting the number of poles standing immediately in front of the crop being estimated. It was suggested that by repeating these counts over the same lines year after year a figure could be secured which would indicate the change in acreage from year to year. For this proposal it was argued that it would contain no personal bias. One weakness of the system of counting fields or telephone poles facing fields was the fact that it was not always possible to find railroad lines extending through typical areas of the Cotton Belt, though the method might be better fitted to corn and wheat.

Further use and study of the count system began at once. In South Carolina in 1919 the statistician, B. B. Hare, had counted fields of cotton along the railroads in his state. The change in number of fields from year to year was the one indicator which checked closely with the actual change in acreage for 1921 for the state.

The statistician in Mississippi, D. A. McCandless, went a step farther in applying the count system to the Cotton Belt by inventing a means of measuring the frontage of specific crops, and of uncropped areas fronting on the road over several thousand miles of highway running through representative sections of the state. The idea was, of course, that by measuring the frontage of each crop, year after year, changes in acreage could be readily calculated. The combined talents of the Mississippi statistician and the Bureau technician perfected a measuring machine to be attached to an automobile, much as an odometer, but which contained a series of adding machine units, one for each crop to be measured, and a device for tripping out one and tripping in another. The figures taken for each segment of the highway measured, were recorded so that it was possible to compare from year to year the frontage of crops for each part of the route. That system proved very useful also in getting a basis for estimating crop abandonment by measuring the frontage of cotton, for example, in June and again later in the season.

Before new types of data could be substituted for the old judgments as to percentage change, careful tests were essential to prove that they were more reliable. Joseph A. Becker told the story:

> The first study of the relative merits of judgment and individual-type inquiries was reported at a regional meeting at Madison, Wisconsin, in 1920. In that study, the Assessors' annual enumerations of acreage served as the basis of comparison of the judgment inquiries and the individual-farm inquiries, made in May of 1919 and 1920. The study definitely disclosed the limitations of the judgment form of inquiry in that it apparently failed to register the full increase or full decrease from year to year, and sometimes even failed to denote the direction of change. The individual-farm inquiry itself was found generally to somewhat overstate the acreage in the current year in terms of the preceding year, but there were indications that the degree of bias (used here to include cash crop bias, selectivity of sample, etc.) could

be measured. In 1923, another bias study was made of the individual-farm data on cotton acreage, by States, which were available as far back as 1915. This study disclosed the superiority of the individual-farm inquiry over the judgment inquiry, but showed more variation in bias than did the data for Wisconsin.

In 1924, the annual inquiry on acreages of crops grown (made each August) was discontinued in favor of the Rural Carrier Survey made in September. In making these surveys, the rural mail carriers leave questionnaire cards regarding acreage in the boxes of farmers on their routes and collect them when they have been completed by the farmers. . . .[199]

The introduction of the individual-farm crop-acreage reports obtained by the rural mail carriers, along with the measurement of crop frontages, resulted in great improvement in the accuracy of the crop-acreage estimates.

As another way of bettering the service, W. V. Bingham, a psychologist, was asked to study the methods being used by the Division of Crop and Livestock Estimates in making contacts with farmers.

After making a study of the inquiries sent to farmers, he made suggestions which greatly simplified the phrasing and resulted in a marked increase in the percentage of responses.

One other measure for strengthening the work was to put men in charge of the reports who, as state statisticians, had been most successful in developing effective reporting methods. In 1922, Joseph A. Becker, state statistician in Wisconsin, who had shown unusual ability, was called to Washington to head up the research on methods and to serve on the crop reporting board. Becker has told the story of the testing of old methods and the introduction of new methods:

> The year 1925 saw the innovation of a country-wide individual-farm inquiry with respect to acreage at planting time. For the first few years, the inquiry was made during May, but since then it has been made during June. . . .
>
> In many States, annual enumerations of acreages are made by the local tax assessors. In all these States, crop reporting is carried on as a cooperative undertaking and the Department has participated in the development of these enumerations.

INTENTIONS TO PLANT

In April 1923, the first report on intended acreages of crops was published. As early as April 1917, a judgment-type survey of intended crop acreages had been made for the use of the Government but not for publication. These intentions-to-plant reports are intended primarily to provide farmers with information in time to permit a change in plans when the aggregate reported plans take the form of excessive increases or decreases. The 1923 intentions report[200] related to 9 principal spring-sown crops, including cotton, and was based upon individual-farm data. The report indicated farmers' intentions to increase cotton acreage by 12 per cent. It caused considerable activity

[199] J. A. Becker and C. L. Harlan, "Developments in Crop and Livestock Reporting Since 1920," *Journal of Farm Economics,* 21:801–02 (November 1939). The portion of this article quoted above was written by Mr. Becker. A report on the study referred to was made by Becker under the title, "The Individual Farm Report in Estimating Acreage," U.S.D.A., Bureau of Markets and Crop Estimates, Mimeographed Report (Washington, March 18, 1922).

[200] U.S.D.A., *Weather, Crops and Markets,* 3:394 (April 28, 1923).

on the Cotton Exchanges and apparently brought about some reduction in cotton prices. Therefore, it was adversely criticized by some as being grossly inaccurate. As a matter of fact, the increase in acreage that was finally planted — as ascertained in July and confirmed by the production for that year — was greater than the increase shown in the reported intentions. Perhaps no more dramatic validation of a statistical report was ever made. But in the next session of Congress, legislation[201] was enacted prohibiting future reports of this character regarding cotton, on the [alleged] ground that the effect of such reports was likely to be more harmful than beneficial.

Technical development has taken place in connection with the intentions-to-plant reports as a background of experience has been accumulated. The first reports of intentions-to-plant merely set forth the percentages derived from the samples. About 1929, it became obvious that a definite overstatement of total intended crop acreage was present in the data, probably attributable to the innate optimism of reporters. Accordingly, the 1931 report pointed out that certain allowances must be made for observed departures between intentions and final harvestings. In 1932, farmers reported an intention to grow an acreage of spring wheat 53 per cent greater than that harvested in 1931. Because of heavy abandonment in 1931, the large increase in the acreage for harvest actually represented only a slight increase in acreage planted. This incident pointed to the desirability of establishing a series of estimates of planted acreage to serve as a basis for the reports on farmers' intentions. By 1938, a sufficient series of estimates of acreage planted had been accumulated to introduce a further innovation by relating the intentions to a planted base. In that year the intentions-to-plant report came into its own as a report of "prospective plantings," in which the reported intentions were interpreted in relation to actual plantings.

YIELD INQUIRIES

Judgment data with respect to yield per acre continue to be used in the preparation of estimates of final yield per acre. For a considerable number of commodities, judgment inquiries still serve as the only basis for yield reports. Their continued use for this purpose is justified by the findings of extensive comparisons of returns from this type of inquiry and yields derived from Census returns.[202]

In 1929, the Department initiated its annual yield inquiries based on individual-farm samples for principal crops, some 25 in number, in which the individual farmer is asked to report the acreages harvested (or to be harvested) and the total production in terms of bushels, tons, pounds, etc. . . . Judged by comparisons of the yields derived from these inquiries with the yields derived from the 1929 and 1934 Census data, this yield information based on individual-farm samples is slightly superior to that drawn from the judgment type of inquiry. The correlation between the two series, however, is very high, and considering the greater ease and speed of tabulation, the reported yields based on judgment serve a very valuable purpose in arriving at preliminary estimates of yield per acre.

Changes in final yield estimates indicated by the individual-farm yield reports are ordinarily small. . . .

Development of the new series of data with respect to crop acreages and crop yields has been paralleled by development in methods of appraising the current returns. . . .

Use of dot charts of relationships, which began about 1928, made possible

[201] Act May 3, 1924. See *U. S. Statutes at Large*, 43:115.
[202] C. F. Sarle, "Adequacy and Reliability of Crop-Yield Estimates," U.S.D.A., *Technical Bulletin* 311 (Washington, 1932).

more precise interpretations of current yields in terms of the Census level. In like manner, the use of charts in connection with indications of acreage has made it possible to determine more precisely the current acreages and their relation to base years. Thus, the usual indication of change in acreage is called the "current-historic" percentage. It is derived from the aggregate acreage of a crop reported by a group of reporters as for harvest on their farms in the current year and the acreage of the crop reported on the same schedules as harvested in the preceding year. It is thus a comparison of what farmers have harvested or expect to harvest with what they remember or choose to remember as harvested in the preceding year.

When these current-historic indications of change have been plotted in comparison with the actual changes, a whole series of relationships has been discovered. For some crops, because of cash-crop bias, this percentage has regularly understated the current year's acreage . . . . For still other crops, the relationship understates at one end of the scale and overstates at the other. In some instances, the relationship appears to be nonlinear.

Dependent upon the time of the year in which the inquiry is made, the current-historic percentage, involving as it does the element of a memory report for the preceding year, must be used with full knowledge of the developments during the preceding year. . . . An improvement designed to eliminate the effects of faulty memory of this nature is the use of the so-called "identical" indication. In this indication, the acreage reported in the current year is tabulated in conjunction with the acreage previously reported for the same farm. This is done by picking out the returns from the same farms in two successive years and tabulating them together. . . .

Charting of relationships between the sample and the Crop Reporting Board's estimates has been particularly helpful. In the "ratio to land" approach in estimating acreage, the current aggregate acreage of each crop, expressed as a percentage of the total farm land of the farms reporting, is plotted for each year against the Board's estimated acreage for each year and against the Census acreage in Census years.[203] This approach has the obvious advantage of placing the estimate for each year in independent relationship to the Census years, since it is not affected by data for any other year, and ordinarily does not involve allowances for abandonment. . . .

The main reliance of the Crop Reporting Board in preparing crop-progress reports during the growing season is the "condition" of the various crops as reported by farmers. The reports of condition are furnished to the Department monthly during the growing season by crop reporters who appraise the current promise of yield in their neighborhood. During recent years, the Department has also secured from crop reporters near the close of the growing season for each crop, a statement of "probable yield." Both "condition" and "probable yield" as reported for preceding years are charted against yields as finally determined, and a degree of relationship is established for use in interpreting the current condition reports.

Use of condition reports has undergone gradual development. Prior to 1912, the condition of crops was published without official interpretation of the indicated yield. From 1912 until 1929, the reported condition of various crops was interpreted in terms of indicated or forecast yield per acre on the basis of pre-established pars. . . . The pars[204] assumed a one-to-one relationship,

[203] This approach is generally credited to E. A. Logan, late statistician for Missouri. The "ratio-relative," in which the ratio to land for each year is divided by the ratio to land for the preceding year to secure an indication of acreage change, was first used by Nat C. Murray and S. A. Jones about 1916.

[204] "The par is based back upon the reported condition and the reported yield per acre

which was frequently not confirmed by dot charts in which each reported condition was associated with the yield per acre for that year. It was decided, therefore, to discontinue the use of pars and to read the forecast yield per acre from the dot charts. This decision was inevitable as the Board began to use other indicators of crop prospects than the condition report.

Full public attention was drawn to this change in the policy of the Crop Reporting Board at the time the Cotton Crop Report for August, 1927, was issued. In that report,[205] the Board announced that it had departed from the basic pars and had made allowance for potential weevil damage, which was apparently not adequately reflected in the reported condition. This departure resulted in an estimate which was considerably below the reports of the private crop estimators. But as the season advanced, it became obvious that the departures had been in the direction of a more precise forecast of probable cotton production. The final report of cotton production — 12,956,000 bales in comparison with the August forecast of 13,492,000 bales — was convincing proof that the condition report needed additional interpretation if the Board was to provide the most dependable service.

A large number of individual studies have been made in which weather conditions are independently related to yields in the past years. A considerable number of charts have been developed, also, in which weather data are utilized in conjunction with reported condition to give additional indications of probable yield. . . .

Regionalization of Inquiries

With the passage of time, an increased specialization in the production of crops and in the production of livestock products has developed in the United States. This development led to an increased inter-regional movement of agricultural commodities, which in turn led to an increased interest in the statistics of production, probable production, and sales . . . .

At one time, a uniform schedule of inquiry concerning condition and yield of various crops was used throughout the United States, except that for the most part cotton has been separately reported from the beginning. In some states, information regarding the condition of certain crops was asked in some months when the crop had already been harvested and the yield determined. Because of the length of the harvesting season from the Rio Grande to the the Canadian Border and from the Delta of the Mississippi to the Plateaus of Wyoming, it became evident that the dates of inquiry should be staggered to fit the time of harvest. As early as 1914, separate questionnaires were in use for Florida and California. In 1924, separate questionnaires were provided for the northern and southern states. This regionalization of inquiries has gone on until at the present time the United States are grouped into 17 groups. . . .

Fruit Production Estimates Based Upon Modified Par System

Estimates of fruit-crop production have been based upon judgment reports from crop reporters and fruit growers at time of harvest concerning the current year's production expressed as a per cent of a full crop. . . .

During the growing season, condition of fruits is reported monthly, and these figures are correlated graphically with the season-end percentage of production figures. . . .

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of past years." J. A. Becker, "Cotton Crop Forecasts of the United States," *Southwestern Political and Social Science Quarterly*, 7:126 (September 1926).

[205] U.S.D.A., *Crops and Markets*, 4:282 (August 1927).

Commercial Vegetable Crop Reports Require Field Observation

During and since World War [I], the production of vegetable crops has increased greatly in areas favorable for their production. Centers of production for one or more early vegetable crops have been developed from New Jersey to Florida, westward as far north as Kansas, and to the Pacific Coast. Products from these areas are in competition with each other and with the storage supplies from the preceding year in the northern states. In each of these areas, producers are vitally concerned with the extent of production and the dates of probable movement from other areas which precede and follow them in harvesting and shipping. In many instances the shipping period in these areas is of short duration and the information must be furnished promptly to be of maximum service. Although information is gathered by questionnaire, just as in the case of field crops, much information for these crops must be gathered by personal visits at opportune times during the growing seasons. At present, reports on condition and forecasts of production, intended acreage, acreage planted and acreage harvested are prepared for 26 vegetable crops, including potatoes and sweet potatoes, and for peppermint. Separate reports are made concerning the production of 11 vegetables for canning or processing. Reports for most of these commodities are made twice a month during the season when they are of importance in particular areas.[206]

Livestock Estimates

For years it had been recognized that the livestock estimates of the Department of Agriculture were inadequate.[207] The first effort to expand the estimating work was for this reason centered upon securing funds for the expansion of livestock reports. This was an objective much desired by Secretary H. C. Wallace, who went before the committee on appropriations in February, 1922, and made an appeal for an increase in the appropriations for this purpose. Additional funds were secured for the fiscal year 1922–23. Work began with much wholesome stimulus from the Secretary.

One morning in the spring of 1922 Secretary Wallace and Postmaster General Work rode to the office together. The result was a suggestion that the rural mail carriers assist in gathering livestock statistics. It appears that the Postmaster General was happy to co-operate. Secretary Wallace at once took the matter up with the Bureau of Agricultural Economics and the suggestion was referred to the associate chief in charge of crop and livestock estimates, L. M. Estabrook, whose reaction was that the rural mail carriers had been tried and found wanting.[208] The chief of the bureau then asked W. F. Callander, one of the younger members of the Division of Crop and Livestock Estimates, to find a way to use the rural mail carriers in collecting livestock statistics.

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[206] Becker and Harlan, "Developments in Crop and Livestock Reporting Since 1920," pp. 802–07, 809–15.

[207] Cf. p. 235.

[208] An earlier effort to use the rural mail carriers in the gathering of information from farmers was looked upon as a failure and therefore conditioned those in charge against future efforts to use that agency in statistical work. For Estabrook's report of the experiment, see U.S.D.A., *Annual Reports,* 1914 (Washington, 1914), pp. 239–40.

Callander prepared a card of inquiry and suggested that the carrier leave one card in the mailbox of each of ten farmers on his route. The card called for facts regarding pig production on the farm of the farmer who made the report for the present and the preceding year, and asked for no information from the rural carriers themselves. No effort was made to make a census covering all farmers. Sample data was the aim. That was far simpler than the experiment which was abandoned in 1913–14.[209] The new idea was so different that Estabrook at once fell in line with the suggestion. The proposal was taken to Secretary Wallace who liked it and took the matter up with the Post Office Department where the plan of procedure was approved. The card used in April, 1922, is reproduced (see p. 248).

In June, 1922, the first pig report secured by the mail carriers provided a ten per cent sample of the commercial hog production in the United States. The cards carried reports on the number of sows farrowed, number of pigs born, number of pigs saved, and number of sows bred or to be bred for fall litters. About the same time the corn crop estimate was available. These facts, along with other general information available for the purpose, gave the basis for deciding whether it would be wise for farmers to change their plans with respect to breeding for fall litters; also whether it might pay to feed with the view of delivering light or heavy hogs to the market the current season. The first report pointed toward the wisdom of revising fall breeding plans downward. Pig reports provided the basis for an estimate, as soon as the June pig report was available, of the number of hogs which would be delivered to market the following winter.[210] That information was timely and immediately understood.[211]

The 1921 hog crop had been marketed without adequate information. Early in 1922 it was found that the supply had been largely exhausted at a time when the packers had not accumulated adequate stocks for spring and summer demands. Prices of hogs jumped to high levels but too late to benefit the farmers because most of their 1921 hog crop had been sold. Beginning with 1922 pig reports have made it possible for the hog crop to be marketed as a known quantity, and farmers have had a chance to check on their breeding opera-

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[209] U.S.D.A., *Annual Reports*, 1914, pp. 239–40.

[210] That estimate was put on a more secure basis in 1932 when the 1930 Census had tabulated data showing, as of April 1, the number of sows farrowed, or to farrow, in the spring of 1930. On the basis of that figure the number of pigs saved was put on a number basis as distinguished from a percentage increase or decrease when compared with the previous year.

[211] Forecasting the movement of hogs into packing centers was not a new idea nor a new practice. In a letter to H. C. Taylor under the date October 12, 1947, Nat C. Murray said that from 1872 to 1912 his father, Charles B. Murray, made estimates of future marketing of hogs. For further details of the *Cincinnati Price Current* method of crop reporting, see C. B. Murray, *Life Notes . . .*, pp. 75–76. C. B. Murray made forecasts of the supplies of hogs which would be available in the current season in comparison with previous years. The forecast for the season, giving the probable increase or decrease in the supply, was accompanied by figures showing the "approximate" number of hogs packed each season for previous years. For a sample of C. B. Murray's forecasts, see "Summer Supply of Hogs," *The Cincinnati Price Current's Statistical Annual for 1907, Supplement to The Cincinnati Price Current*, 64(18):9 (May 2, 1907).

POST OFFICE DEPARTMENT IN COOPERATION WITH U. S. DEPARTMENT OF AGRICULTURE

SPECIAL BROOD SOW REPORT, APRIL, 1922

This report will be used by the Department of Agriculture in estimating the number of brood sows on farms and probable hog production in 1922 compared with 1921. Individual reports will be kept strictly confidential. Only State results will be published.

Report for farm operated by:

INDICATE BY CHECK WHETHER OWNER ☐ OR RENTER ☐

NAME ..... R. F. D. No. .....

POST OFFICE ..... STATE .....

1	2	3 Spring litters.		4 Fall litters.		5 Average number of pigs per litter. NOTE. — Do not include pigs which died at birth or shortly afterwards.		
Total num- acres in farm.	Total num- ber of acres of crop land, in- cluding hay land.	*a* Number of sows which have farrowed or are due to farrow be- tween Jan. 1 and June 30, 1922 (this year).	*b* Number of sows on farms last year which far- rowed be- tween Jan. 1 and June 30, 1921 (last year).	*a* Number of sows which have been or will be bred to farrow between July 1 and Dec. 31, 1922 (esti- mated).	*b* Number of sows on farm last year which far- rowed be- tween July 1 and Dec. 31, 1921.	*a* Average litter for 1922 to date.	*b* Average litter for first six months of 1921.	*c* Average litter for last six months of 1921.
Acres.	*Acres.*	*Number.*	*Number.*	*Number.*	*Number.*			

POST OFFICE DEPARTMENT

COOPERATING WITH

UNITED STATES DEPARTMENT OF AGRICULTURE

Instructions to Rural Carriers for filling out Special Brood Sow Report, April, 1922.

The purpose of the report called for on this blank is to aid the Department of Agriculture in estimating the number of brood sows on farms and probable hog production in 1922 compared with 1921.

The farmer himself will be benefited most by the results of this inquiry; therefore it is to his own interest to furnish data. Reports are desired from 12 farms on each route, using one blank for each farm.

The farms reported upon should be such as to give a good average picture or "sample" of all farms on the route. The surest way of obtaining a fair "sample" is to get reports from every farm along a portion of the route — owned and rented, large and small, good and poor, etc. — just as they come.

The best results will be secured if the carrier will question the farmers and fill in the answers himself. Where the farmer himself fills out the blank the carrier should see that all questions are fully answered.

Return at least 12 blanks, properly filled out, to the Postmaster for forwarding to Washington not later than May 8.

Your aid and cooperation is earnestly solicited.

FOURTH ASSISTANT POSTMASTER GENERAL.

GOVERNMENT PRINTING OFFICE

Both sides of Post Office Department Pig Report Card.

tions in June and December with a view to adjusting the supply of hogs to the market demand and with due regard to the availability of feed for the hogs.

After the data were so easily secured through the rural carriers, the major task in the case of the pig statistics was the tabulation. This was worked out by further developing the bureau machine tabulating division using the punched card system. Of that work, H. C. Taylor, the Chief of the Bureau of Agricultural Economics in 1923 stated:

> The special swine reports on the spring and fall production of pigs and intentions to breed which were started in the spring of 1922 in cooperation with the Post Office Department have proved a real success. In the spring of 1922, out of 500,000 schedules sent out to the rural carriers in the 17 states on which to gather information direct from the farmers, nearly 300,000 were returned. Based on the returns of these schedules a report was issued on June 25, 1922, which attracted a great deal of attention and which later developments showed to be approximately correct. Schedules were sent out and another report was issued in December similar to the one issued in June but covering the entire United States, and a third report was issued as of June 1, this year [1923].
>
> These reports have demonstrated their value as an indicator of the number of hogs that may be expected at market months in advance of the time when the report is made. The forecasts of intentions to breed are also of direct benefit to farmers and should become an important factor in stabilizing the supply. As the work develops and the weaknesses in the method are discovered and eliminated, it is believed that the actual number of pigs available for market can be forecasted many months in advance with a high degree of accuracy.[212]

The mail carriers were used also in securing cattle statistics, but beef cattle statistics were more difficult to manage than pig statistics. Beef comes from dairy herds in the form of cows and veal calves, as well as from beef regions from which cattle are fattened for market at various ages. Furthermore, cattle are moved from state to state as feeders before they finally enter the market for slaughter. Livestock statisticians were placed in as many states as possible with a view to getting supplementary data.

It appears that during periods of expanding production, fewer than a normal proportion of beef cattle flow to market in relation to the total number on farms and ranges; whereas, in times of declining production, more than a normal proportion flow to market. In times of expanding production, cows and heifers are held back to increase calf production and marketing of cows and heifers is relatively small. At the peak of production, cows, heifers, and calves make up an unusually large proportion of the total number of cattle on farms and ranges. Bringing order into this chaotic condition by gathering facts and forecasting trends in the cattle industry was one of the results to be expected from the work which had been initiated.

[212] U.S.D.A., Bureau of Agricultural Economics, *Report of the Chief,* 1923 (Washington, 1923), p. 15.

It was recognized that orderly cow production in the dairy regions would not only help the beef cattle people by inducing a more systematic flow of veal calves and cows onto the market, but would do much to provide the background for orderly marketing of dairy products. Information was gathered as to the number of calves of different ages being reared for dairy purposes. That information gave the basis for a forecast as to the number of cows likely to be in milk several years in the future, and was intended to help the farmer to get away from the immediate price situation as the only basis for deciding whether to increase or decrease his herd. The greater problem was the task before the extension agencies which were responsible for getting that information to farmers and teaching them how to make use of it in stabilizing production.

A man who had much to do with the development of the livestock estimating work of the United States Department of Agriculture was C. L. Harlan, who was brought to Washington in 1921, after considerable experience in Iowa with the Corn Belt Meat Producers' Association, and in the Chicago office of the Bureau of Agricultural Economics, working on statistics of livestock marketing. After coming to Washington, Harlan took the lead in the further development of livestock statistics. He has told the story of the livestock section in an article from which we quote:

> In 1922, a special livestock section was set up in the Division of Crop Estimates, and the name was changed to the Division of Crop and Livestock Estimates. Before deciding on the work to be undertaken by the new livestock section, a number of conferences were held in different parts of the country attended by representatives of the Department, of farm and livestock organizations, of marketing agencies, of railroads and of packers. At those meetings the character of information needed was fully discussed. As a result, a program of reports was decided upon, and the reports were gradually established during the next few years. . . .

Harlan then reviewed the history of the pig reports started in 1922 and continued:

> Another of the initial activities of the livestock section was that of developing methods for getting adequate information as to the movement of livestock by States, by months. This was needed for determining both the total and seasonal movements from and into individual States, and the sources of the total commercial supply of livestock by months and seasons. This involved getting monthly records as to the State of origin of receipts from stockyard companies and from direct-buying packers, records of cars of livestock received and forwarded by stations from railroads, records of brand inspections covering shipment from States, and records of sanitary inspections covering shipments into and (in some cases) shipments from different States. Wherever possible, records were obtained back to January 1920. . . .
>
> These records of livestock movements from and into States are used in the preparation of annual balance sheets for the different species of livestock by States. . . . These balance sheets are the basis for computing estimates of the quantity and value of livestock production and income

from livestock. The preparation of such balance sheets and estimates was started about 1926 and the estimates are available by States from 1924.

By about 1930, the methods of getting information from producers as to changes in livestock numbers had become sufficiently standardized so that comparable indications of changes from year to year since that date are now available. . . .

Although sample returns obtained by rural mail carriers tend to be more random in character than returns made by a regular list of crop and livestock reporters, they do not form a true cross-section sample in which all sizes and types of production are proportionately included. But the kind of farms sampled tends to be fairly similar from year to year. . . . It is from this segment of "replying" producers that the rural carriers' sample is obtained; and although this segment is not an exact cross section of all producers, the changes on these farms are thought to be fairly typical of changes on all farms. Hence, these sample returns are used to estimate relative changes and not to build up a total.[213]

Milk and Egg Estimates

The development of estimates of milk and egg production on the basis of sample data was another movement of the 1920's. Joseph A. Becker was the leader in that important development. He told the story:

Although milk and poultry and egg production are among the most valuable of all agricultural products in this country, estimates have been made only in quite recent years. Prior to 1920, a judgment inquiry concerning production per milk cow for the preceding year was made on the January questionnaire to general crop correspondents. The returns showed a very large dispersion and were affected by memory bias. They were used, however, in preparing the first estimates of milk production.[214] Quarterly inquiries, tried experimentally in Wisconsin during the early 1920's and used in preparing estimates of milk production, showed similar deficiencies. Carefully worded inquiries on annual production per cow and on utilization of the milk were fairly successful as a basis for county estimates in New York, and they have been continued. [215] In 1923, monthly individual farm questions on "milk cows on hand" and "milk produced yesterday" were tried experimentally on the general questionnaires to crop reporters in Wisconsin, [216] and these inquiries were extended to the entire United States in the fall of 1924. . . .

The first quantitative estimates of milk production for the United States, by States, were published in March, 1930 as part of the income report for the period 1924 to 1928.[217] Estimates of numbers of milk cows on farms on January 1 were already available as the first step in ascertaining the average annual number of producing cows. With the establishment of a dairy section in the Division in 1931, annual estimates of milk production and utilization were continued and a start was made toward collecting information on rate of feeding, production practices, utilization of milk

[213] Becker and Harlan, "Developments in Crop and Livestock Reporting Since 1920," pp. 816–21.

[214] W. F. Callander, "Agricultural Statistics for 1917," Wisconsin Department of Agriculture, *Bulletin* 14 (Madison, 1918).

[215] J. B. Shepard and R. L. Gillett, *et al.*, "Statistics Relative to the Dairy Industry in New York State, 1922, Together With Report on Transportation of Milk," New York State Department of Farms and Markets, *Bulletin* 158 (Albany, 1923).

[216] P. O. Nyhus, "A Study of a Statistical Method for Measuring Current Milk Production," U.S.D.A., Bureau of Agricultural Economics, 1924, (mimeo.).

[217] "Farm Value, Gross Income and Cash Income From Farm Production," U.S.D.A., Bureau of Agricultural Economics, March, 1930 (mimeo.).

on farms, and other items of use in appraising the dairy situation. Many supplemental inquiries have been made which are designed to provide greater precision in the estimates of production. . . .

The taking of an individual-farm sample of hens and of egg production for one day of each month was begun in the fall of 1924. . . .

The January 1 livestock inquiries beginning in 1919 had provided for a report of chickens on farms, but no estimates of poultry numbers had been made.[218] Series of sample data on hatchings, home use, sales, and death losses had to be developed before a basis of reports on chicken production could be attempted. The first estimate of chickens on farms and egg production for the United States, by States, also was a part of the income report published in 1930. It was 1931 before a poultry section was established in the Division and a well-rounded program of regular estimates of production and utilization of chickens, eggs, and turkeys was undertaken. . . .

Estimating milk production and egg production involves problems not encountered in making estimates of either crop production or livestock numbers. In the case of individual crops, usually only one crop is harvested each year and this harvest takes place during a well-defined season. It is necessary only to estimate acreage and yield per acre to ascertain production. In the case of milk and eggs, however, production is continuous throughout the year and the "crop" is harvested every day. Not only that, but the basis of production (cows milked and hens in flocks), and the rate of production (milk per cow and eggs per hundred hens), changes from month to month. Hence, the estimation of production involves the preparation of monthly estimates of both the number of producing units and the rate of production.

Information used in making these monthly estimates comes largely from monthly reports made by regular crop reporters.[219]

Changes in Procedures and in Organization

During the 1920's the statisticians improved the quality of the estimates by research in many lines. They tested old procedures, keeping those that were demonstrated to be useful. They introduced new procedures, testing them critically and utilizing them as soon as their merit was proved. Statisticians were skeptical of all lines of inquiry because of possibilities of bias, and subjected all of them to critical checks and counterchecks. That they had ideals of service and a vision of future needs is shown by the increase in coverage of their reports. The number of commodities upon which agricultural estimates were made available grew continuously during that period. The number of series of statistics of each commodity was expanded, acreages planted as well as harvested; monthly marketings; stocks in all positions; quantities sold, used in family living, and otherwise utilized; and the income from the commodity. They improved the timeliness of the reports issued, as witness the quarterly stocks reports,

[218] The general inquiry on chickens on farms and special annual inquiries on chicken and egg production were the bases of the estimates of chicken numbers, chicken production, and egg production for Wisconsin published in J. A. Becker, "Wisconsin Agricultural Statistics for 1920; Annual Crop and Live Stock Review," Wisconsin Department of Agriculture, *Bulletin* 34 (Madison, 1921).

[219] Becker and Harlan, "Developments in Crop and Livestock Reporting Since 1920," pp. 821–24.

monthly reports of milk and egg production, earlier forecasts for most items, and the development of prospective acreage estimates based upon the intention to plant inquiries.

Through the years there were important changes in the organization which performed the crop estimating work. Reorganization, like changes in methods of gathering data, was a gradual evolution. A decentralized organization could not have been perfected when it was first suggested in 1856.[220] Men had to be trained; methods had to be tried out by a central organization. Step by step the organization developed. While a first step toward decentralization was taken in 1914, initiation of the decentralized plan was not effected until 1927.

The reorganization of the Bureau of Statistics in 1914 was in line with Nat C. Murray's recommendations to Carl Vrooman, the Assistant Secretary of Agriculture. That change set the stage for the growth of the work in the states and for turning over to field agents an increasing proportion of the work formerly done in Washington. One by one the office of the statistician employed by the state and the office of the federal statistician working in the state were consolidated under a co-operative arrangement under which one person served as federal-state statistician. The development of state agencies using comparable methods laid the foundation for the move in that direction. That decentralization was largely effectuated during the years 1927–32.

It was obvious that the maintenance of four separate estimating systems was not the most efficient way to get results. But there were many steps that had to be taken in advance of the decentralization of the work. Methods of crop and livestock estimating had to be developed in close co-operation with Washington headquarters if there was to be a uniform system. Men had to be trained who could handle the work in each state or group of smaller states, in harmony with a general plan. Co-operative relations with the states needed to be developed. The foundation for the movement towards decentralization was the system of state statisticians. Gradually state statisticians became joint agents of the state and the national governments, but there still remained a dual system. Direct reports tabulated in Washington, and reports of state statisticians, who summarized their findings and sent them to Washington, were both used in arriving at estimates to be issued by the Crop Reporting Board.

As the work in the states improved, it was hoped that the time would come when the major part of the work of assembling, tabulating, and analyzing the direct reports could be performed in state offices. In 1927 the time seemed ripe for starting that shift. By July 1, 1932, 80 per cent of the responsibility for collecting data from pri-

[220] The idea of having most of the crop estimating work done in the states and only the summaries sent to Washington had been brought forward in 1856 by the Commissioner of Patents, Charles Mason. See p. 175.

mary sources by questionnaire had been transferred to the state field offices.[221]

Decentralization had a far-reaching effect in broadening the coverage of commodities. The state statistician became aware of local economic problems and crises associated with products of minor importance nationally. To meet local demand for information, he was able to set up plans, schedules of inquiry, obtain co-operation from growers and dealers, develop tabulation methods, and institute the publication of estimates to care for local demands. All such information ultimately became part of the national coverage.

The International Institute of Agriculture

We have noted that J. R. Dodge, Statistician of the United States Department of Agriculture from 1866 to 1893, was a member of the International Statistical Institute and attended the first biennial meeting of that Institute at Rome, in 1887 (*supra,* pp. 193–94). That body rendered a service in acquainting the statisticians of each country with methods used in other countries and doubtless was useful in bringing about greater comparability of statistical information issued by various countries. It was not an agency for collecting and disseminating information on a world basis. Each country had to arrange as best it could to obtain information from abroad through special agents or correspondence.

The organized international exchange of information came later when the International Institute of Agriculture was created. Victor Emmanuel, the king of Italy, has been called the "founder" of the Institute and David Lubin has been called its "ideator." In fact, Lubin was not only a man with an idea, but he had the driving force to bring about the creation of the International Institute of Agriculture under conditions which would have discouraged most men.

David Lubin's proposal for export bounties, which was repudiated in the 1890's and in essence accepted in the 1930's, has been discussed.[222] Of far greater importance was his part in creating the International Institute of Agriculture, the first world institution to which the United States adhered.

While Senate committees and farm organizations were giving attention to the farmer's price problem, and while the agricultural situation was attracting the attention of the academic economists of the country, Lubin was gradually thinking his way through that subject with a view to securing justice for the farmer. The evolution of Lubin's thinking is characterized by his ability to outgrow and discard ideas, as well as his ability to reach out and grasp new

[221] Information from U.S.D.A., Bureau of Agricultural Economics, Division of Crop and Livestock Estimates, "Annual Report for Fiscal Year 1932," typed report in files of B. A. E.

[222] See pp. 12–17.

ideas as he caught a larger view of the world of agriculture and commerce. In what Lubin had done up to 1896 he was thinking first of all as a California farmer and then as a United States citizen interested in American agriculture as an integral part of the national economy. Of the unfolding of Lubin's thinking on the economics of agriculture, Madam Agresti[223] said:

. . . in 1894 Lubin's horizon was limited to the need for economic equity as between several interests in his own country. . . .[224]

. . . He had to travel a stage further in his development to see clearly the fundamental solidarity of interests which should unite producers the world over, and to advocate as the remedy for the ills he clearly discerned justice for all rather than artificial protection for the few. His travels in Europe in 1896 were to take him a considerable stage further on this journey.

. . . In the Old World as in the New the decline in the price of agricultural staples was a fact claiming the earnest attention of landowners and economists; but in Europe it was also engaging the best thought of the conservative statesmen. . . .

In Berlin he found both the academic and the political world keenly alive to the gravity of the heavy and constant decline in the price of agricultural staples. . . .

. . . a suggestion was made by Professor Max Sering which became the nucleus around which Lubin's thoughts crystallized during the next few years. "Why should not the agrarians of the world form an international alliance with a central bureau in London, Washington, Berlin or Paris for the protection of their common interests? If this were done might not a common policy be evolved in the interests of all?"

From Berlin Lubin and his party proceeded to Budapest . . . an international congress was meeting in that city to inquire into the . . . causes of and remedies for the decline in the world's price of farm staples. Delegations had come from many countries, but the United States was unrepresented. Lubin received an invitation from the Hungarian Minister of Agriculture to attend. . . . he always considered that the address he delivered before the Congress contained the first outline of the proposal which was to crystallize into the International Institute of Agriculure. . . .

[In that September 1896 address] Lubin first inquires whether the decline in values complained of has been general, "for if all other commodities, including interest, taxes, rent, incomes, and wages have correspondingly declined, then a uniform decline can have no adverse effect upon agriculture. An adverse condition may only result from a disturbance in the relative exchange value, or in an unequal mode of distribution. . . .

". . . All that can be done is to agree to unite all the power at our command in an endeavor so to modify conditions as best to promote our several advantages, not advantages which one individual holds or intends to obtain at the expense of his brother, not an advantage to one country at the expense of another; that is barbarism and robbery. We should aim to cultivate that which will be of advantage to our neighbor, and in this we will most surely find our own highest advantage.

"To do this requires not only will but wisdom, and wisdom may be more readily found in union, in deliberation, and in interchange of experiences. . . ."

Here [writes Madam Agresti] we have indeed a widening of the horizon.

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[223] Olivia Rossetti Agresti was Lubin's interpreter and assistant from 1904, when Lubin arrived in Rome, until his death in 1919.

[224] O. R. Agresti, *David Lubin: A Study in Practical Idealism* (Boston: Little, Brown and Co., 1922), p. 120.

In 1893 the Californian had become an American, in 1896 the American was becoming a citizen of the world. . . .[225]

. . . The three and a half years' campaign [for the export bounty] had not been wasted time; the experience had been intensely educational, and the first one to profit thereby had been the promulgator himself. He had learned much from the criticisms of the free traders, he had learned still more from his contact with the viewpoint of economists in foreign countries. While his premise had stood the test and come out unscathed from the ordeal, he had come to see flaws in the proposed remedy. When tried by the selfish standards of the advocates of a high tariff it was unshaken; from that point of view all considerations of fairness demanded that the farmer should be given his share of protection. But there was a broader and a higher standpoint from which the whole question could be considered, one more in line with ideal justice. . . .[226]

The idea he now set out to realize was that first roughly outlined in his speech in Budapest in [September] 1896. Agriculture could only hold its own through international action, and to make possible such international action the farmers of the world must be able to secure through a World Chamber of Agriculture that knowledge of world conditions which they required in order to hold their own in the economic arena. . . .[227]

. . . This Chamber [International Chamber of Agriculture] was to be semi-official. . . . In effect, it would be an economic parliament with advisory and consultative powers, through which the farmers of the world could express their needs and wishes. Its primary function would be to gather and disseminate, on a world-wide scale, dynamic, price-forming information on the condition and prospects of the growing crops and on the world demand for them. Such information, gathered by each nation and assembled, summarized and published telegraphically by the Central Chamber, would place the farmers in possession of that inside information on crop conditions and stocks, on transport facilities and market needs which had hiterto been gathered by private interests and used as the stock in trade of the astute speculator and price manipulator.[228]

[It was recognized that] the price of staples with a world market is a world price, determined by a knowledge of world conditions, and that, therefore, the farmers need a central world crop-reporting bureau.[229]

. . . All agreed that its [the Institute's] main activity should be statistical and informative:

"Collect, study, and publish, as promptly as possible, statistical, technical or economic information concerning farming, the trade in agricultural products, and the prices prevailing in the various markets. Communicate to parties interested, also as promptly as possible, all the information just referred to."[230]

Besides this it was to:

"Indicate the wages paid for farm labor; make known new plant diseases appearing in any part of the world, showing the territories infected, the progress of the disease, and, if possible, the remedies effective for its control; study questions concerning agricultural coöperation, insurance, and credit in all their aspects; collect and publish information which might

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[225] Agresti, *David Lubin*, pp. 133–38.
[226] Agresti, *David Lubin*, pp. 141–42.
[227] Agresti, *David Lubin*, p. 166.
[228] Agresti, *David Lubin*, p. 189.
[229] Agresti, *David Lubin*, p. 202.
[230] Madam Agresti is quoting from Article 9 of the Convention of 1905 establishing the International Institute of Agriculture, signed at Rome, June 7, 1905. The Convention appears in Asher Hobson, *The International Institute of Agriculture* (Berkeley: University of California Press, 1931), pp. 327–29.

be useful in the various countries in the organization of works connected therewith."

The final clause of . . . Article 9 . . . conferred on the new body power to "submit to the approval of governments measures for the protection of the common interests of farmers and for the improvement of their condition. . . ."

Moreover, the Institute was to act not only as an international crop-reporting bureau, but it was recognized as the legitimate organ through which the agricultural interests in each country could voice their wishes in the international sphere, and it was empowered to formulate them as draft conventions and to submit them to the several governments for approval.

In fact, we have here the first attempt in history to create an international parliamentary body. The protocol signed by the plenipotentiaries of the forty governments represented at the conference on the seventh of June one thousand nine hundred and five may properly claim to be a historic document, for it created the first League of Nations, a League of Nations for economic betterment [under the name of the International Institute of Agriculture].[231]

While the International Institute of Agriculture[232] came into being as a result of David Lubin's insight, vision, and zeal, it realized much that J. R. Dodge had worked for. It provided an international clearinghouse of statistical information on the production and distribution of farm products. The creation of the International Institute of Agriculture, although not sponsored by the United States Department of Agriculture, was in line with its development of economic fact-finding work. The objective was a clear vision of the environing economic world in which the farmer lived, produced goods, and sent them to market. While the United States was one of 40 nations signing the Convention of June, 1905, creating the International Institute of Agriculture, the membership of the United States was not established by action of the United States Senate until January 29, 1908.[233] The work of the Institute got under way in 1908. The resources of the Institute were small, never exceeding a quarter of a million dollars a year, and yet it was able to provide a telegraphic exchange of crop forecasts as soon as they were released by the member countries and prepare annually the *International Yearbook of Agricultural Statistics*. It also gathered economic information from the various countries, which threw light upon the statistics of production and trade, gathered and published information on agricultural legislation, and served as a clearinghouse of information on the physical and biological aspects of agriculture. It was a small institution, a beginning in international co-operation, "boldly conceived and bravely projected," and one from whose history more pretentious international agencies may, to advantage, draw valuable lessons.

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[231] Agresti, *David Lubin*, pp. 210–12.

[232] A history of the Institute and a most valuable critical analysis of its purposes, activities, and policies is available in Hobson, *The International Institute of Agriculture*.

[233] U.S.D.A., *Yearbook*, 1908 (Washington, 1909), p. 125.

13.

The Census of Agriculture

THE FEDERAL CENSUS REPORTS are a great source of facts about agriculture in the United States. The decennial census of population was first taken in 1790 and every ten years thereafter. Commencing in 1840 the census included a count of livestock on farms, and the bushels, pounds, or tons produced of each crop. Commencing in 1880 it has included acreages of crops and the tenure of farms. These basic facts can be used to show the trends in agricultural expansion and contraction, and in the tenure of farms, and to provide the background in terms of which the ideas of any given period can be appraised.

A study of census taking impresses one with the geographic breadth of the undertaking, the large number of questions asked, the large number of persons who participate in making the enumerations, the extent to which answers to questions can be only rough estimates, and finally the tremendous amount of routine work required in tabulating millions of specific entries on the schedules into tables showing each item by counties, states, and for the United States as a whole. The taking of the census is a vast enterprise in which wise preliminary planning is required if the results are to serve the most useful purposes. Analysis of the results is important, but this is limited in large measure to that which is implicit in the planning.

The Reports for 1840, 1850, 1860, and 1870

The first effort to take a census of agriculture was made in 1840 at the suggestion of President Van Buren, who, in his second annual message to Congress, dated December 3, 1838:[1]

> . . . not only recommended the adoption of the necessary provisions for taking the sixth census, but also suggested "whether the scope of the measure might not be usefully extended by causing it to embrace authentic statistical returns of the great interests specially intrusted to or necessarily affected by

[1] J. D. Richardson, compiler, *A Compilation of the Messages and Papers of the Presidents, 1789–1897* (Washington, 1896), 3:497.

the legislation of Congress." This suggestion found expression in the requirements of the census act, by which it was directed that the marshals and assistants should "collect and return in statistical tables . . . all such information in relation to mines, agriculture, commerce, manufactures, and schools, as will exhibit a full view of the pursuits, industry, education, and resources of the country. . . ."[2]

In the January 1840 number of the *Cultivator* the editors[3] advocated a census of agriculture. In the March issue of the same year they announced the fact that there was to be a census of agriculture, published the inquiries and asked all newspapers to print them and thus help make a good census.

The crop production and livestock statistics provided by the census of 1840 are of value to the student of the growth and reshaping of American agriculture. Data on agriculture in the 1840 census, when shown on dot maps and compared with similar maps based on data from later decennial censuses, are illuminating with respect to the extent of agricultural production in 1840 and the changes which occurred in the later decades. Data from the 1840 census also have value from the standpoint of agricultural history and the economics of farm management.

The agricultural census for 1840 did not include statistics of acreage of the various crops. Those figures were first obtained by the census in 1880, which also introduced questions relating to acreages in specific crops and the tenure of farms.[4] The number of agricultural questions on the census schedule had been increased slightly during the four decades, beginning with 37 in 1840 and reaching 52 in 1870. In 1880 General Francis A. Walker expanded the subjects covered by the agricultural census by asking 108 questions on the general schedule and by using special schedules which, all told, contained 1,572 questions, each of which was asked of only a limited number of farmers.[5]

In 1839 Archibald Russell had made suggestions with respect to what the agricultural census of 1840 should contain.[6] The one thing which he emphasized, and which was not included, was the acreage of specified crops: wheat, barley, oats, rye, buckwheat, corn, potatoes, and hay. This important item, easier for the farmer to give accurately than yield or total production, continued to be omitted until 1880.

An inquiry was made in 1850 and in 1860 relating to "What crops are short," "To what extent," and "Usual average crop."[7] Answers to those questions might have been useful in making crop

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[2] C. D. Wright, *The History and Growth of the United States Census* (Washington, 1900), p. 36. The act from which this directive is quoted by Carroll D. Wright is shown in *ibid.*, Appendix E, pp. 927–30. See especially Section 13 of act, p. 930.

[3] Willis Gaylord and Luther Tucker. *Cultivator,* 7(1):7 (January 1840).

[4] Wright, *The History and Growth of the United States Census,* pp. 99–103.

[5] Wright, *The History and Growth of the United States Census,* p. 87.

[6] A. Russell, *Principles of Statistical Inquiry; as illustrated in proposals for uniting an examination into the resources of the United States with the census to be taken in 1840* (New York: D. Appleton and Co., 1839), pp. 99–120.

[7] Wright, *The History and Growth of the United States Census,* p. 122.

estimates for the nine intervening years between the decennial censuses, "but this inquiry was abandoned at the census of 1870 as being of no statistical value."[8]

In 1874 a statistical atlas of the United States,[9] based upon the ninth census (1870), was issued under authority of Congress by Francis A. Walker, Superintendent of the ninth census. In that atlas major attention was given to mapping geographical distribution of the various elements of the population. Considerable attention was given to the physiography of the United States which so greatly influences agricultural production. Maps showing the geographical distribution of crop production were limited to wheat, rice, oats, corn, cotton, hay, tobacco, hops, and sugar. The distribution of livestock was not mapped, but the sections of the country producing dairy products were mapped on the basis of the value of that product. One map shows the distribution of the total agricultural production in terms of the farm value of the product. There is also a map showing the number of acres of improved land in farms per square mile.[10]

The Report for 1880, Walker and Dodge

Francis A. Walker was not satisfied with the results of the census of 1870 and put forth great effort to get the law revised so that a better census could be taken in 1880. He was successful in his efforts and accepted the position of Superintendent of the Census for a period long enough to organize the work and determine the content of the inquiry. He resigned in 1881 with much of the work unfinished, but not until the quality of the results had been assured. To him and to J. R. Dodge belongs the credit of introducing crop acreage statistics in 1880.

Since 1866 Dodge had been in charge of the crop estimating service of the United States Department of Agriculture. He had felt keenly the need of census figures for crop acreages as a starting point for the inter-census crop estimates. As statistician in charge of the agricultural census of 1880, Dodge was in a strategic position to introduce the item of acreage of specific crops. Walker had secured legislation which gave him considerable freedom in revising the census.

Special schedules used in 1880 included 60 questions relating to "cost of labor and material expended in the cultivation of an acre of cotton" and 205 other questions relating to the "details of cotton culture."[11] Cereals, fruit growing, forestry products, tobacco culture, meat production, sheep husbandry and wool growing were other

[8] Wright, *The History and Growth of the United States Census*, p. 122.
[9] U. S. Census Office, *Statistical Atlas of the United States, based on the results of the Ninth Census*, 1870 . . . compiled under authority of Congress by Francis A. Walker. 1874.
[10] See U. S. Census Office, *Statistical Atlas* . . . 1870, Plates XXXVI and XXXVIa.
[11] Wright, *The History and Growth of the United States Census*, p. 105.

subjects studied in detail by means of special schedules as a part of the 1880 census.[12]

The census of 1890 more than doubled the number of questions on the general agricultural schedule and reduced the number of questions on special schedules. Furthermore, special schedules for 1890 dealt with many topics not formerly covered by the census, such as livestock not on farms, livestock on ranges, irrigation, nurseries, seed farms, truck farms, and viticulture.[13]

In addition to questions on the tenure of farms, in the agricultural census, the 1890 population schedule carried an inquiry relating to farm ownership and mortgage indebtedness. This inquiry was made:

> . . . under the provisions of the supplemental act of February 22, 1890, as to the ownership of the farm or home occupied, and where owned, whether or not the farm or home was mortgaged, and in such cases the name and post office of the owner. When the population schedules were returned to the census office the name and address of each person reported by the census enumerators as owning and occupying a mortgaged farm or home was recorded and a schedule, in circular form, was sent by mail, calling for the amount of the mortgage debt unpaid June 1, 1890, the annual rate of interest, and the object for which the debt was incurred, representing, in all, 5 items of inquiry.[14]

Walker appraised the value of the additional material in the census of 1880:

> The value of the new classes of information, now obtained for the first time, is believed to be not less than that of those heretofore obtained. Indeed, were an intelligent statistician to be asked to make his choice between the statistics of the acreage of the several crops and the statistics of their yield for a given year, he would prefer the former, since the acreage tells the real story as to the extension of a given crop, while the yield in any one year is largely influenced by accident or by conditions peculiar to that year, which might not be found repeated in the year or years succeeding.[15]

The most significant new item included in the 1880 census, aside from the acreage of specific crops which was so important as a basis for crop estimates in inter-census years, was that relating to land tenure. Up to that time it had been anybody's guess as to the extent of farm tenancy in the United States. The 1880 census showed that about one-fourth of the farms were operated by share or cash tenants. This material will receive further attention under the subject of land economics.

Of the special schedules used in the census of 1880, that relating to cereals was extremely comprehensive.[16] A high proportion of the

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[12] Wright, *The History and Growth of the United States Census,* p. 105.
[13] Wright, *The History and Growth of the United States Census,* p. 105.
[14] Wright, *The History and Growth of the United States Census,* p. 121.
[15] F. A. Walker, "The Statistics of Agriculture," U. S. Census Office, 10th Census, 1880, *Report on the Productions of Agriculture* (Washington, 1883), 3:viii.
[16] Wright, *The History and Growth of the United States Census,* pp. 241–45.

questions in that inquiry related to the physical and biological aspects of the subject, such as soil, topography, preparation of the soil, time of seeding, methods of cultivation, methods of harvesting. There were questions intended to provide a picture of just how the operations were performed. For instance, in regard to wheat, the question was asked, "What proportion was cut by hand, and what by machine?" The questions relating to Indian corn dealt with the extent to which corn was planted by hand and the extent to which the crop was hoed. One question related to the extent to which corn was planted so as to be cultivated both ways, thus reducing the need for hand hoeing. Significant economic questions related to wages of labor and the time required to perform certain operations by specific methods. Much of the data called for was essential in figuring cost of production of a bushel of wheat.

Another line of questions pointed toward the more effective use of census data in the crop estimating work of the United States Department of Agriculture. J. R. Dodge, who was then serving as chief statistician for agriculture in the Bureau of the Census, had been asking for more complete census data on which to base his work as Chief of the Division of Statistics of the United States Department of Agriculture. In the general schedule for agriculture he had introduced questions relating to acreages of specific crops. In the special schedules, questions were introduced relating to yield and quality of principal cereal crops in 1879 compared with the years 1878 and 1877.[17] Some of the other questions were: "What is usually considered a *fair yield* to be anticipated in your region of winter wheat (bushels per acre)? Of spring wheat? What was the *largest* yield per acre you know of in your region in 1879?" Regarding Indian corn similar questions were asked, such as, "What is considered a fair and what a good yield in your locality?" Those questions were asked of scattered correspondents. Dodge doubtless looked upon the results as providing a better starting point for basing inter-census estimates of yields per acre. Answers to some of the questions in those schedules indicate the stages of progress in the mechanization of cereal production and also the extent of soil exhaustion as measured in terms of the use of fertilizers.

Many of the answers to the special inquiry on cereals were not in a form that could be tabulated. General impressions were secured and published. Answers to questions relating to "fair yield" and "good yield" resulted in some generalization. Those questions calling for comparisons of the crops for 1879 with 1878 and 1877 yielded nothing that was published, although Dodge may have gleaned something which was useful in crop estimating work.

The monograph on cereals[18] was based upon material drawn

[17] Wright, *The History and Growth of the United States Census*, pp. 241–45.

[18] W. H. Brewer, "Report of the Cereal Production of the United States," U. S. Census Office, 10th Census, 1880, *Report on Productions of Agriculture* (Washington, 1883), 3:371–553.

from a great variety of sources in addition to regular census material and special schedules. There was also a monograph on "Flour-Milling Processes."[19] It was of peculiar significance at the time because of the recent introduction of the Hungarian roller-mill gradual reduction process which made it possible to produce white flour from hard, red, spring wheat which had sold at a discount but which, with the new process, brought a premium in the market. Two monographs dealt with tobacco.[20]

Francis A. Walker undertook to compare the relative merits of census data secured through personal visitation of each farm and estimates made by "selected agents" reporting "for their respective districts in gross." It seems obvious that Walker had the crop estimating work of the United States Department of Agriculture in mind when discussing the second method. His discussion reads:

> A canvass of the agricultural interests of a country through a farm-to-farm visitation has certain advantages and likewise certain disadvantages in comparison with a canvass of those interests conducted within small districts by selected agents who are not confined to the use of a farm schedule, but who, after making the inquiries and pursuing the observations necessary to satisfy their own minds, report for their respective districts in gross.
>
> Upon the whole, the advantages of the former method of enumeration greatly preponderate. It is true that by this method each farmer, whether intelligent or ignorant, is in turn made the census reporter, but at the same time the farmer has the benefit of the positive and negative suggestions of the official enumerator, who may generally be relied upon to check gross errors, whether of intention or of inadvertence. On the other hand, each farmer knows the main facts relating to his own land and the operations upon it far better than they can be conjectured in a general way by even the most accomplished agricultural statistician, and if the farmers of any region feel no indisposition to tell the truth, the aggregation of their individual statements will yield a result far more closely approaching the facts than any man's estimate. And in general it may be said that farmers entertain no objection to a full disclosure of the information called for by the census schedules, except, perhaps, in some cases, as to the value of farms, of live stock, of farming implements and machinery, and the total value of the farm productions of the year. As to crops, acreage, etc., no appreciable disadvantage is experienced in gathering the agricultural statistics of the census from any unwillingness to make answer on those points, or any disposition to misrepresent the truth. Against this must be set the consideration that a person reporting at large for any considerable district is almost always subject to a strong temptation, consciously or unconsciously, to exaggerate the facts of production, not to speak of the simple unfitness of most men, even most men of intelligence, to make statistical estimates or computations extending over any considerable field, even where no predisposition exists adverse to an impartial judgment.[21]

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[19] K. Neftel, "Report on Flour-Milling Processes," in *ibid.*, 3:555–82.

[20] J. B. Killebrew, "Report on the Culture and Curing of Tobacco in the United States," in *ibid.*, 3:583–880; J. R. Dodge, "Statistics of Manufactures of Tobacco and of Its Commercial Distribution, Exportation, and Prices," in *ibid.*, 3:881–950.

[21] F. A. Walker, "The Statistics of Agriculture," in *ibid.*, 3:7.

Farm Management Uses of Census Data

From the standpoint of the student of agricultural economics there is a marked difference between census statistics and the crop estimating service. Census material is too old when it comes from the press to serve as a guide in making immediate decisions. It is valuable because it gives a factual basis for looking back through the years and seeing trends. It has value because it shows the geography of agriculture, the distribution of each line of production, and the way in which various competing crops divide the territory and in which supplementary and complementary enterprises are put together into a farming business in a given locality. All of this is of great value in providing background for decisions. But in addition to a background, a foreground is needed. Farmers face decisions from day to day which require forecasting. The crop and livestock estimating service is intended to state current facts and future probabilities. Both of these forms of statistical effort are necessary. The estimating work rests back upon the census. Census statistics are based upon comprehensive data, whereas the estimates, at best, are based upon sample data and impressions of individuals speaking for a community. Both the census and the crop estimates use concrete specific counts and both use estimates. Estimates made by the farmer in giving answers to the census enumerator are for yields, acreages, values, etc., on his own farm. Unfortunately, the figures are called for many months after all has been completed and another year's crop is in the farmer's mind. Estimates made by correspondents in the crop estimating service are for communities, or even townships or counties. Advocates of crop and livestock estimates have emphasized the fact that government estimates are essential if farmers are to have information equally as good as that of the middlemen to whom they sell their products.

While W. H. Brewer's report on cereal production dealt in a large measure with the physical, biological, and mechanical aspects of grain farming, it gave some attention to the economics of farm management. He discussed size of farms, intensity of culture, cost of production of farm crops, relation of mixed farming to the efficient use of the labor force on the farm, complementary relation of certain enterprises, reduction of risk through diversification, and the better conservation of the soil through rotation of crops. Brewer indicated that motives other than dollar motives are important in considering those institutions which determine the status of the farmer. He emphasized the significance of free landowning farmers in our political system.

> The agricultural features of political significance in this country are:
>
> First, that we never had a peasantry in the sense in which that word is used in the Old World, and that we have no agricultural class. Whether

a man tills the farm, practices law, preaches the gospel, manages a factory or a mine, is a matter of personal choice, and not of caste or class.

Second, that the tillers of the soil mostly own the lands they till, and get the benefits of the improvements they make and the wealth they create.

Third, that agricultural land has only an agricultural value; that its ownership confers no privileges and imposes no burdens which are not common to other forms of property; that it can be bought and sold as other property can; that its ownership is as absolute as that of other property, no more and no less.

On these three features are founded our strongest confidence in the stability of our political institutions and our brightest hopes for future progress.

The progressive element in a country like ours, and, indeed, in any country, is in that portion of its population which is neither very poor nor very rich. This is the stratum in which originates the most of that quality of intellect by which mankind has made its greatest achievements. From this class comes practically all of that kind of intellectual genius which manifests itself in literature, art, discovery, and invention, in business sagacity and social reform, and our agricultural system has been eminently adapted to breed and develop this class.[22]

The Census of 1890, John Hyde

John Hyde, who in 1897 was to become Chief of the Division of Statistics of the United States Department of Agriculture, was Special Agent in charge of the agricultural census of 1890. Of his report Hyde said:

The statistics of agriculture were obtained for the census of 1890, as for previous censuses, upon special schedules carried by the enumerators, by farm to farm visitation, and from the farmers.

There is very little change in the scope of the agricultural investigations since the census of 1880. The orchard products, cotton seed, and horticulture appear in this report, for the first time at any census.

. . . The production of 1889 being the nearest known crop to the census of June 1, 1890, all averages and percentages appearing in this report showing the relation of the productions of the country to the population or to the live stock are based upon the production of 1889, and the returns of population or live stock on June 1, 1890.

The total values of all farm products, as given in this report, are the aggregations of the values furnished, either to the enumerators or directly to the Census Office, by the producers themselves, but being to a large extent estimates, as stated in the tables, they are doubtless affected by that well-known tendency of farmers to underestimate the values and in some cases also the quantities of such of their products as are consumed wholly or in large part upon the farm. Such total values, therefore, must be taken only as estimates, and with the understanding that they are considered too low. In the few cases in which the values of particular crops are given, and such crops are money crops, there is no reason to think that the figures published are open to the criticism above stated.[23]

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[22] Brewer, "Report of the Cereal Production of the United States," U. S. Census Office, 10th Census, 1880, 3:525.

[23] J. Hyde, "Statistics of Agriculture," in U. S. Census Office, 11th Census, 1890, *Report on the Statistics of Agriculture in the United States* (Washington, 1895), [Section 1] 5:1.

Little more needs to be said here of the report based upon the farm schedules of the 1890 census. But in addition to the material on the farm schedule, referred to above by Hyde as having "little change in the scope . . . since the census of 1880," there were two important monographs: One on irrigation, by F. H. Newell, was statistical and descriptive in character and gave a comprehensive picture of the development of irrigation; the other, by G. K. Holmes and J. S. Lord, was significant in that it explored a new field relating to farm people and their homes.[24]

The census report of 1880, the first to give the status of farmers with respect to landownership or tenancy, gave no attention to indebtedness. Original plans for the census of 1890 made no provisions for the study of indebtedness, but, in 1889, Bronson C. Keller, of St. Louis, a man who had devoted much thought to economic and social questions, got two other men in St. Louis to join with him in organizing "The Western Economic Association," consisting at first of only those three gentlemen as members.[25] They issued "An Address to the People of the United States," which was sent to all kinds of organizations, both agricultural and industrial, with the result that many organized agencies of the country took action and sent resolutions to Congress carrying this statement:

> Whereas there is a growing belief among the people of the United States that the present economic condition of society tends toward the concentration of wealth in the hands of the few to the detriment of the many by compelling the majority of the people to become and remain debtors; and
>
> Whereas the public good demands that accurate information giving statistics bearing upon the relative distribution of wealth among the citizens of the republic should be easily accessible; therefore, be it
>
> Resolved, That the Superintendent of the Census be urgently requested to collect the data to show in the next census what percentage of people in this country occupy their own homes and farms, and what proportion are tenants; and of those who occupy their homes and farms what pro portion have their property free from debt, whether in the form of mortgages or ground rents; and of the homes and farms which are under mortgage and ground rent, what percentage of the value is so mortgaged or held subject to ground rent.

Congress made a swift response to the enormous number of petitions received and passed an act, which was signed February 22, 1890, providing for the collection of indebtedness information.[26]

That act was passed by Congress a little too late to make the inquiry an integral part of the Eleventh Census, but five simple questions were put into the population schedule, the purpose of which

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[24] F. H. Newell, "Report on Agriculture by Irrigation in the Western Part of the United States," in *ibid.* (Section 2) 5:1–283. G. K. Holmes and J. S. Lord, *Report on Farms and Homes: Proprietorship and Indebtedness in the United States,* U. S. Census Office, 11th Census, 1890 (Washington, 1896), 13:1–646.

[25] *Ibid.,* 13:3. For further information regarding Keeler's views on the relation of deflation to the burden of indebtedness, see: B. C. Keeler, *History of Demonetization* (St. Louis: Western Economic Association, 1896).

[26] For more detail regarding the methods used in making the study see *infra,* Part Eight.

was to determine whether the home was owned or hired, and if owned whether or not it was free from mortgage or incumbered. The homes were divided into farm homes and other homes. Once those questions had been answered, the remaining information with regard to the amount of indebtedness and the interest rate was determined by correspondence supplemented by the work of special agents. The new contribution of that study related to the indebtedness of farmers who owned the farms they cultivated. It also presented comparative figures for ownership of other homes and farm homes which showed that farmers more generally owned their homes than was true of "others." In succeeding census reports, questions relating to indebtedness of farmers were placed in the regular agricultural schedules.

That effort to secure a statement of the indebtedness of farmers on a nationwide basis was doubtless one of the results of the agitation arising from the idea that indebtedness was leading to the loss of farms through foreclosure and was a mechanism leading to an increase in tenancy and a decline in landownership. Henry George had made a statement to that effect, while others claimed that the mortgage used in the purchase of land was the means of climbing from tenancy to free ownership of land. The census report threw much light upon the subject of ownership and indebtedness and is a valuable source book for the study of those questions.

The report on farms and homes was submitted for publication on May 2, 1895. In the same year G. K. Holmes became a member of the staff of the Division of Statistics of the United States Department of Agriculture.

The Census of 1900, L. G. Powers

L. G. Powers was appointed chief statistician for agriculture for the census of 1900. He had been Commissioner of Labor in Minnesota. In that capacity he had secured considerable experience in the field of statistics, although his special training had been in theology. He served for years as a minister prior to becoming Labor Commissioner.

The general agricultural statistics in the census of 1900 were, in the main, along the same lines as the two preceding ones. There were more cross classifications, which were made possible by the use of the Hollerith equipment. The classifications showed certain characteristics of farms of different sizes, tenures, age of farmers, etc. As in 1880 and in 1890, farms were classified as to tenure. In addition, a special study was made in 1900 of the ownership of rented farms.[27] In that study rented farms were classified on the basis of the geographical location of the residence of the owner with respect to the location of the farm. The rented farms of each county were

[27] U. S. Census Office, 12th Census, 1900, *Agriculture* (Washington, 1902), Vol. 5, Part 1, pp. lxxxv–xciii. See also general tables on pp. 309–17.

counted separately for those whose owners lived in the same county, in the same state but not in the county, in the United States but not in the same state, and those owned by non-residents of the United States. The owners of rented farms were classified on the basis of the number of farms, acres in farms, and value of farms owned by each. All classes were subdivided on the basis of size of farms. The statistics indicated that the highest percentage of owners who owned more than one farm was found to be in the South where the area operated by each cotton or tobacco cropper was reported as a farm.

In preparing the text of the report of the census of 1900, considerable attention was given to agricultural history and agricultural geography. Under the title "Agricultural Progress of Fifty Years,"[28] figures from six census reports were brought together to show the expansion of the number of farms, total acreage, improved acreage, value of farms, size of farms, the increase in the value of farm machinery used per farm, per grand division, and for the United States as a whole.

Additional geographic materials were displayed in the report on cereals where eight double-page color-density maps were presented. Two such maps were used to show cotton production per square mile and per acre, and another to show hay production per square mile. Those special items should not be mentioned without reporting that the general tables supply basic facts of agricultural geography down to the county unit. When the series of census reports are taken together, they provide the most important source of factual material essential to portraying the history of agricultural progress. That statistical material furnishes the framework of agricultural history and agricultural geography, state by state. Life and color need to be added to that picture through the use of contemporary descriptive material which may be found in agricultural journals and many other sources.

Investigation by National Board of Trade

As has been mentioned in the story of the evolution of the crop estimating work of the United States Department of Agriculture, the crop acreages reported by the census for 1899 were much greater than had been estimated, and the National Board of Trade had set up a Committee of Inquiry to look into the matter.

> [L. G. Powers] manifested great readiness to facilitate the work undertaken, by displaying returns from enumerators, showing the machines used for punching cards for the purpose of accomplishing mechanical registration by the tabulating machines, which were also exhibited in operation, with full explanations concerning these features of the work; the methods pursued for correction of incomplete or defective returns, and, in fact, each step from the work of the enumerator and the supervisor to the final con-

[28] "Agricultural Progress of Fifty Years," U. S. Census Office, 12th Census, 1900, *Agriculture* (Washington, 1902), Vol. 5, Part 1, pp. xvi–xxxv.

solidation of totals, covering the several distinctive lines of data collected by the Census Bureau relating to agricultural affairs. . . .

DEGREE OF ACCURACY

. . . The Statistician stated that in the work of revising the schedules received from the enumerators there were 199 out of every 200 entries passed as substantially correct, or one-half of 1 per cent not so passed. This, however, is not accepted by the committee as evidence that such percentage represents the extent of actual errors in such entries. The proportion of bad schedules was stated as 1 in 300 in the North and 1 in 100 in the South. Upon this basis it was assumed by the Statistician that the effect of errors upon results did not exceed from one-half to 1 per cent. . . .

It was claimed that the errors in the punching-machine work not detected represented a fraction of 1 per cent, and that these, combined with the errors of the tabulating-machine work, represented about one-third of 1 per cent. How such a conclusion was or could be reached was not explained, . . .

It was claimed by the Statistician that the possibility of error in the crop-reporting work was much less than the number of schedules, and that by taking the returns of any county it would be shown that the average enumerators gave a reasonable report, a few being too large, and a few too small, with an average reflecting general accuracy of the reports. This presentation is regarded by the Committee as implying a higher degree of merit than a careful and specific analysis of the returns will fully justify. . . .

SUGGESTED IMPROVEMENTS

The Committee regards it important that in the future work of the Census Bureau the various defects found in the methods pursued in the Twelfth Census in the collection and presentation of agricultural statistics should be remedied. These features include the following:

In all the more important districts the supervisors should institute schools for instruction of enumerators, to the end that the fullest possible understanding shall be had of the requirements for correct records on the schedules, thus securing a higher degree of accuracy in the primary basis for such statistics.

In the editing of schedules greater care should be had in having the clerk well qualified by fitness and training for such work, for in this feature is one of the most significant of possibilities for harmful shaping of the results and therefore one of the greatest needs for careful and intelligent scrutiny and preparation of this record as a basis for compiling and tabulating operations.

The verification of cards prepared for the tabulating machines, including the mechanical tests for cards, should be accomplished before instead of after the machine tabulation, and a larger proportion than heretofore, or all the cards, should be verified by the schedules.

The more important crop data should be tabulated in duplicate, to prove the accuracy of the work.

The Committee recognizes the achievement of the Census Bureau in completing its work within a period of two years as a matter of great importance relative to the value of such information, and regards with satisfaction the assurance of the Chief Statistician for Agriculture that the experiences had in the Twelfth Census work give encouragement to the expectation that improved methods can be introduced at the next Census making it possible to reach conclusions within a period of eight months,

and that the progress of operations of the past census has been educational to an extent insuring great improvement in features of accuracy of such future statistical work.

In view of the advantages to be expected from the Census Bureau being placed on a permanent basis, and of the promise of a shortened period for presentation of results, the committee favors a Census report every five years,[29] especially for agricultural data which form a basis for calculations and estimates of area and production by other official service, governmental and otherwise, as to the more prominent crops, and as to the numbers of farm animals.[30]

The Census of 1910, E. Dana Durand

The census of 1910 was undertaken by a new Director, E. Dana Durand, but Le Grand Powers continued as the chief statistician for agriculture. It is true that the investigation of the government statistical work relating to agriculture by the National Board of Trade, in 1902, had left a cloud over Powers, particularly with respect to the figures for crop acreages, but that had been largely dispelled by the report of the Keep Commission in 1906. When Durand became Director of the Census in June 1909,[31] he at once called in several men to assist in planning various phases of the census. For the agricultural census he called T. N. Carver of Harvard, H. C. Taylor of the University of Wisconsin, G. F. Warren of Cornell University, and J. L. Coulter of the University of Minnesota. When they arrived in Washington, Powers had the agricultural schedule ready to print. The advisory group worked with Powers for two months. When the members left, the schedule had been revised in many particulars. Those revisions had been presented to the Director and accepted. The advisory group went home well pleased with the thought that the 1910 census would provide better materials for research and teaching in the field of agricultural economics. But soon after the departure of the agricultural economists, Powers proceeded to reshape the schedule. He took to the Director one item at a time which he desired to have changed. Dr. Durand was occupied with many other matters and lacked the time to evaluate each of Powers' individual and apparently minor changes in the schedule. In the course of time Powers had reshaped the schedule to suit himself.

On November 27, 1909, G. F. Warren wrote to H. C. Taylor:

I received a copy of the revised proof of the Agricultural schedule called "The 4th Revision." I would judge from it that Dr. Powers had re-cast it once more in the mold which he used formerly. In a number of instances I think that the 4th revision is an improvement over the report of the committee, but there are a number of very serious changes. The most serious is the entire omission of all questions relative to pasture, and the return of

[29] That suggestion may have had some influence in starting the quinquennial census in 1925.

[30] National Board of Trade, *Proceedings*, January 1903, pp. 86–88, 92–93.

[31] U. S. Bureau of the Census, 13th Census, 1910, *Agriculture* (Washington, 1913) 5:title-page.

the old form of woodlot question. It seems to me, that the committee's report on pastures and woodlots is superior, by far, to anything that I have ever seen suggested, and to omit all information as to the acreage in pasture, while asking the acreage of trivial crops and the number of guinea hens, is to say the least, amusing.

Also the question as to the number of trees not of bearing age has been omitted. What the prospective orchard grower needs to know is not how many trees are now bearing, but how many young trees there are. It is much more important to the agriculture of the United States to know the number of trees not of bearing age than to know the number of mule colts.

The schedule on horses and mules has been re-cast in the old mold whereas I believe that the committee's report is the best that can be devised.

To make up for this omission, the old question asking the acreage to be planted for 1910 is inserted. You know our unanimous opinion on this was, that it was useless and that the best way to dispose of it was to ask the question for a few crops only, instead of for thirty-five (35) crops.

There are a lot of other points to which I have called the attention of Dr. Willoughby. One which you will notice is that the "I" to be inserted before irrigated crops is again re-cast in the old mold; also an "X" is to be marked before animals that are owned by the tenant. As you know, this means that probably one-half of the irrigated land and one-half of the animals belonging to tenants will be credited to unirrigated land and landlords respectively, because all omissions by the enumerator are added to this side of the question. It seems to me that such a schedule violates the most elementary principles of statistics, because it places all the errors of enumeration on one side.

I wonder whether there are enough cases where the landlord and tenant work the farm together in partnership to make this category worth while.

If you have not received a copy of this revised proof, I hope that you will take the time to get one and look it over, as you know magazines and newspapers have credited us with preparing this schedule which means we will be held responsible for its imperfections. I do not think that we can afford to let it go through as it stands, if we can possibly help it.[32]

Warren and Taylor corresponded first with Powers and then with Durand about the schedule. On December 16, 1907, Warren wrote Taylor:

I have written to Dr. Durand twice, and have seen to it that several other people have written to him. I told him what I firmly believe, that he cannot afford to let the schedule go through as Powers has arranged it, and it seems that he should destroy any plates that he has. I hope that he will do this.[33]

On January 4, 1910, Durand wrote to Taylor asking him to come to Washington to help with the agricultural census. He asked Taylor to become his personal assistant in administering the agricultural division of the census. In that letter Durand said: "I do wish to have some one who can communicate directly with me and have a large share in determining the policy of the Division of Agriculture."

After considerable correspondence between Durand and Taylor, arrangements were made for the latter to do some work on the census

[32] Letter in H. C. Taylor Archives.
[33] Letter in H. C. Taylor Archives.

in Madison and to spend four months during the summer helping Durand in Washington. But in March 1910, a crisis developed in the Division of Agriculture of the Bureau of the Census. Warren and Taylor were again called to Washington. They studied the situation in detail and spent nearly two weeks making final adjustments in the schedules and planning for the tabulation of the results. Early in June Taylor returned to Washington.

Powers had been in charge of the census of agriculture of 1900 and thought he knew just how to proceed in 1910. But many of the methods used in editing the schedules in 1900 were questionable. For example, when information, such as the value of farm implements and machinery on June 1, 1900, was not on a given schedule — say Schedule No. 30 in the stack of schedules being edited — Powers asked the clerks to take the average for that item on Schedule No. 29 and Schedule No. 31 and put the resulting figure on Schedule No. 30. Another rule which Powers had introduced was that in cases where the farm was leased, but it was not stated whether it was for cash or for a share of the crop, the clerks were to mark it "cash." Where no rule of thumb for problems of editing could be laid down, Powers had the clerks bring the problem to him. Thus a great deal of random guessing was incorporated into the census figures without warning to those who made use of the figures. One special job of arbitrary editing had to do with the great number of farm schedules turned in by the enumerators for small tracts of land, particularly in the neighborhood of cities. The definition of "farms" seems to have been less specific in the census schedules for 1900 than for 1880 or for 1910. Furthermore, instructions were given to include as farms "tracts of land used for agricultural purposes which are not generally known as farms, and have no owners, tenants, managers, or hired men residing upon them. . . . All such tracts of land should be included. . . ."[34] A high percentage of those schedules were only partially filled out. Powers wanted each schedule to be made complete. With that in view he assigned the task of editing those "small farm" schedules to a man who had taken the census in an area near a large city and who thus was assumed to know the character of those "small farms." That man and two or three clerks were kept busy for about a year "arbitrarily supplying information assumed to be omitted on incomplete schedules."[35] This "manufacturing of details" was quite extensive. If a place was reported as a farm, but without much further information on the schedule, those in charge of editing arbitrarily filled in vacant spaces with a prescribed number of cows, horses, chickens, etc., and gave them certain prescribed values. The census for 1880 reported 4,352 farms in the United States under three acres; that item was not shown separately in 1890; the census

[34] U. S. Census Office, 12th Census, 1900, *Agriculture*, 5:753.
[35] Based upon conversations in 1910 and again in 1947 between H. C. Taylor and C. B. Hurrey, the man who had been assigned to this task of editing in 1900.

for 1900 showed 41,385 such farms; and the census for 1910 reported 18,033.[36] This indicates that an unusual number of small parcels of land were included as farms in 1900. The explanation given was:

> The effect of the changes made from census to census in the definition of a "farm" is seen most conspicuously in the statistics of the number of "farms" less than 3 acres in size. That number was published at the censuses of 1880, 1900, and 1910, but not at other censuses. When the census was taken in 1880, the enumerators were instructed as follows: "No farm will be reported of less than 3 acres unless $500 worth of products has been actually sold off from it during the year." The number of places under 3 acres in size reported was 4,352, or only one-tenth of 1 per cent of all farms in the United States. At the census of 1890, when the same rule applied, the smallest size group of farms shown was that of farms under 10 acres.
>
> At the census of 1900, 41,385 places under 3 acres in size were reported as farms, an immense increase over the number in 1880. This increase was largely due to the difference in the definition of farms. In tabulating the returns in 1900, however, these places of under 3 acres were separated into a number of groups according to the value of products. This tabulation showed only 7,853 such places which reported farm products valued at $500 or more in 1899. It is believed that this figure (7,853) is fairly comparable with the figure for 1880 (4,352).[37]

Instead of arbitrarily repudiating those practices, Taylor proposed this method of procedure: As soon as cases appeared which had been handled by that rule of thumb, a letter was written to the person named on the schedule to see how good the guessing might be, and a record was kept of all changes made in the meantime. Returns on several hundred letters indicated that the rules of thumb were more often wrong than right. In the tenancy case, farmers who were classified simply as "tenants" were quite as apt to be share tenants as cash tenants, and in one case after another where arbitrary decisions had been made they were proved to be inaccurate. The conclusion arrived at and ultimately put into effect was that where exact facts could not be secured the schedules should be tabulated as returned by the enumerators and a record kept of the number of farms on which, for instance, the value of farm machinery was not indicated. Tenants were to be tabulated as "share tenants," "cash tenants," "share-cash tenants," and "tenants, unknown." In other words, it was thought better, even though the census schedules were imperfect, to tabulate the material available rather than mix information on the schedule with guesswork.

Although it took almost all summer to persuade Powers of the necessity of abandoning his methods of editing, he finally capitulated. It was not necessary for Taylor to report that result to the Director, for Powers took his group of assistants to the office of the Director

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[36] U. S. Bureau of the Census, 13th Census, 1910, *Agriculture* (Washington, 1913), 5:23, 261. For more detailed figures for 1900, see U. S. Census Office, 12th Census, 1900, *Agriculture*, 5:31, 690 (Tables 4 and 51).

[37] U. S. Bureau of the Census, 13th Census, 1910, *Agriculture* (Washington, 1913), 5:23.

and told how carefully work had been carried on all summer to try to find ways to edit those incomplete schedules. He said that the staff had been driven to the above conclusion. That final meeting with the Director was held on the morning of the day Taylor was to return to Wisconsin. After the meeting with the Director, Powers accompanied Taylor to the railroad station. He boarded the Pullman with Taylor, sat down, and said, "I cannot let you go without telling you how much I appreciate the way in which we have struggled against each other all summer without an unkind or angry word, but I need not tell you it is the hardest thing in the world for me to admit that I do not know."

As a part of that summer's work, Taylor had made a trip throughout the South to study the possibility of preparing a special census report on plantations. There had long been an argument to the effect that what the census called a "farm" in the South was often simply a bit of land cultivated by a cropper under the immediate supervision of the planter, that in reality the real unit was the plantation, which often contained 50 or even 100 small areas of land occupied by croppers. Taylor's trip through Georgia, Alabama, and Mississippi to study plantation units resulted in a new plan of procedure by the census for reporting those units.[38]

During the summer of 1910 Taylor tried to interest Durand in the use of dot maps as a means of illustrating the Thirteenth Census volumes on agriculture. Taylor thought he had made no headway, but decided to make a set of dot maps of the type he thought useful in presenting census data. This he did on his own account at the University of Wisconsin. About a year later, when he was asked to help prepare a set of maps, he was able to supply the desired set without delay.[39]

Tenure statistics were given in greater detail in the report of the 1910 census than in previous reports. Analysis of the data was given in a chapter entitled "Statistics of Farms, Classified by Race, Nativity, and Tenure of Farmers."[40]

The Census Reports for 1920, 1925, and 1930

The census of 1920 was taken as of January 1. That census was an improvement in several ways over that of 1910. Questions relating to tenure were more specific, and as a result, there were fewer farms where the form of tenancy was not specified. The plantation schedule was not used in 1920. The regular schedule was so framed as to make it possible to tabulate separately share tenants

[38] For a summary of this, see 13th Census, 1910, *Agriculture,* 5:23, "Plantations in the South," U. S. Bureau of the Census 5:877–89.

[39] See 13th Census, 1910, Vol. 5, for 46 dot maps showing numbers and values of domestic animals; production and value of 21 crops; expenditures for labor, fertilizer and feed; size of farms, land in farms, farm land value, farm tenure, etc.

[40] U. S. Bureau of the Census, 13th Census, 1910, *Agriculture* (Washington, 1913), 5:169–255. See also *ibid.,* "Plantations in the South," pp. 877–89.

proper and croppers. Furthermore, tenants paying a fixed amount of cotton, for example, were tabulated separately from cash tenants. Those two improvements went further than the plantation schedule of 1910 in designating the status of the non-landowning class of tillers of the soil in the South.

Statistics were gathered in 1920 for expenditures; farm facilities, such as motor vehicles, telephones, water and light; and information was gathered on the extent to which farmers utilized co-operative buying and selling agencies.

Prior to 1920 farm population was not tabulated separately. Rural population had been given as a residuum after subtracting the urban population from the total population. What proportion of this rural population was farm population was not known.

Charles J. Galpin, had come from the University of Wisconsin to the Department of Agriculture in 1919 to study farm population and rural life. Galpin wanted facts about the farm population. He suggested to the Director of the Census a simple means of marking the heads of families in the population schedule so that the farm population could be tabulated as a separate grouping. The idea was adopted. Figures showed that the farm population was 61 per cent of the rural population, and 29.9 per cent of the total population in 1920.[41]

One item in the instructions to the enumerators for the 1920 census throws light on the question as to whether estimates and guesses enter into census data, but does not indicate the extent to which guesses were made. It does, however, indicate that they were encouraged. The instructions:

> All questions to be answered. — No question on the farm schedule should be left blank by reason of the difficulty of getting exact information. When it is impracticable to get exact information, an estimate should always be made. Get the farmer to make an estimate, if possible, giving him such assistance as he absolutely needs. If he is unable to make any definite estimate, make the estimate yourself on the basis of such information as he can give you. Even a rough estimate or a "guess" is better than a blank space.
>
> Accurate information to be secured. — On the other hand, no reasonable effort should be spared to obtain exact statements, where this can be done. If records have been kept, exact figures based on these records should be required. Enumerators should not accept estimates in place of exact figures simply because it is less work to make an estimate than it is to figure up the records.[42]

The first quinquennial census was taken as of January 1925. Members of the staff of the Bureau of Agricultural Economics were called upon to assist in preparing the schedules. Population on farms was tabulated. Kinship of landlord and tenant and the type of road

[41] U. S. Bureau of the Census, 14th Census, 1920 *Agriculture* (Washington, 1924), 5:892. See also C. J. Galpin and Veda B. Larson, "Farm Population of Selected Counties," U. S. Bureau of the Census, (Washington, 1924), p. 16.

[42] U. S. Bureau of the Census, 14th Census, 1920, *Agriculture* (Washington, 1924), 5:910.

adjoining the farm were other new items on the agricultural schedule of 1925.

The census of 1930 was taken as of April 1. It failed to carry through the tenure classification of earlier decennial reports. In 1930 tenants were classified as "cash" or "other." Under "other" were included share tenants, croppers, share-cash tenants, and tenants paying a fixed rent in kind known as "standing rent." In earlier reports the latter had been included with the cash tenants.[43] That method of tabulating threw about 80 per cent of the tenants into the class called "other" and thus departed from the clear-cut analysis of 1920.

A special feature of the census of 1930 was the study of types of farming. The census of 1900 had included some work on types of farming but on a different basis of classification and in considerably less detail. There were, therefore, no figures with which to compare those for types of farming in 1930. In 1930 each farm enumerated was assigned to a class of which the members were similar with respect to their organization in 1930 and their output of 1929. Relative importance of the enterprises as sources of income was the major criterion used in classifying the farms by type, nine of which were reasonably distinct, whereas one other class covered country estates, part-time farmers, subsistence farms, feeding establishments, greenhouses, and other occasional businesses. Most of the familiar facts of previous census reports were displayed in a special volume of statistics by type of farm by counties. The type of farm study was a valuable contribution to the geography of agricultural production viewed from the standpoint of farm organization and management, with special reference to the combination of enterprises. It provided a basis for regionalizing the outlook service, and was much used in discussions of the needs of farmers as they became articulate in the early 1930's.

[43] U. S. Bureau of the Census, 15th Census, 1930, *Agriculture* (Washington, 1932), 4:145

14.

Historical and Geographical Approach

THE HISTORICAL AND GEOGRAPHICAL STUDY of farm management is useful because the facts of history and of geography amplify the facts of individual experience in providing the basis of judging what to do and how to do it in organizing and operating a farm effectively.

Importance of Historical View

The historical method is indispensable to the understanding of institutions which give form and effectiveness to the policies affecting agriculture. It is often true that in the abstract a given policy with respect to land tenure, market regulations, and price controls seems rational. Yet a policy quite different is adopted and institutions or agencies are set up to administer legislatively established regulations which conform more closely to the grooves of habitual action of the people concerned than to the grooves of logical thinking.

For example, in the 1920's, when the farmer's share in the national income fell to an unusually low level, two alternatives presented themselves. One was to reduce the tariffs on imported goods so that the dollar exchange could be created abroad with which to buy more agricultural surpluses and at the same time reduce the extent to which labor and industrial limitation of competition maintained relatively high prices on goods and services which farmers had to buy. Owing to the grooves of thinking prevalent in the United States, that rational approach had to be abandoned in favor of efforts to make the tariff effective for agriculture and of finding means to limit competition between farmers by paying the individual for reducing his output of certain staples. The history of agricultural policy may prove valuable in arriving at a rational view, for, when viewed historically, the situation can be appraised more coolly than when participating in the struggle.

Hope of progress lies in an educational program which will provide a clear picture in the minds of the people of the strength and weakness of the customary order, how it has been outmoded in many respects and how it should be rationalized. On the other hand, the study of history will also show how old institutions, customs, or contracts, laws or administrative orders, protect certain members of the economic order from the harsher workings of a free competitive system and should perhaps continue for this very reason. They may in some measure limit the productivity of the economy in the interest of promoting other values — i.e., better living — which cannot be measured solely in dollar values. Matters of this character can be thoroughly understood only in the light of their historical setting.

The historical and geographical, or comparative approaches to the study of agriculture were the earliest methods used in teaching agriculture. Less attention has been given to these methods since funds have been available for making farm business analyses based upon farm management surveys and farm accounts. This is unfortunate, for while the insight gained by the analyses of farm records is valuable, the basis of judgment provided by historical and comparative studies is equally important. In 1911 H. C. Taylor made a statement on the significance of these methods in the study of agricultural economics:

STUDY OF ECONOMIC FORCES

In the study of economic forces, much is gained by tracing their operations through a considerable period of time. Economic forces are not easily measured, and they are so numerous, of such varying strength, and so often operate in opposite directions that at any given moment it is difficult to make an estimate of the future resultant of these forces, unless the changes wrought by them in the past can be resorted to as a basis of judgment.

The federal census for 1900 showed that more than a third of the farmers of the United States were tenants and about a third of the farms operated by owners were mortgaged. Without resorting to the historical method it would have been impossible to know whether the forces making for tenancy were overbalancing the forces making for ownership, or vice versa. It might be inferred by one viewing these facts without this historical setting that ownership had once been universal and that the owners had lost money, mortgaged their farms, lost their titles to the land and become tenant farmers. On the other hand, one might infer that farmers were using tenancy and the mortgage as means of making transition from landless laborers to the free ownership of land. This illustration is to the point because similar inferences were made in 1880 when statistics of land tenure were collected for the first time.

At the present time, with the changes of thirty years recorded at ten-year intervals, it is possible to demonstrate clearly the trend of affairs during that period, and to describe many of the forces which have been operating. The available materials show that young men do very generally rise through successive stages of tenant farmers and mortgaged owners to the free ownership of farms, but the data show also that there has been a retardation in

this movement and that longer time is required to make this movement recently than in earlier years. The census data for 1890 and for 1900 show that older farmers are generally owners, while tenancy is most common among young farmers. By comparing the data for the two periods, it becomes clear that some force is retarding the movement from tenancy to ownership, for a smaller percentage of those of the various ages were owners, and a larger percentage were tenants in 1900 than in 1890. . . .

Another example of the historical study of economic forces is afforded by the sheep industry in the United States. Between 1840 and 1850 there was a decline in the number of sheep kept in parts of Vermont and in the eastern part of New York, but the marked change was in Ohio and Michigan, where there was a great increase. The tendencies were the same in Vermont, New York, Ohio and Michigan, between 1850 and 1860, with an important beginning of the sheep industry in Texas, California and Oregon. . . .

The decade from 1860 to 1870 brought a reaction in northeastern Ohio and the beginnings of the concentration of the sheep industry of Texas in the dry lands of the South. Both of these movements continued during the next decade.[1] By 1880, Vermont had almost ceased to be a sheep state, and the sheep of New York were but a handful in comparison to the number in 1840, but the beginnings of the new industry in the Rocky Mountain states were already important in Colorado, Wyoming, and Montana. During the next two decades the development of the sheep industry in the mountain states continued, but between 1890 and 1900 a marked decline is shown in California, Texas, Wisconsin, Michigan, and Ohio.

When the maps for 1840 and 1900 are compared, it becomes evident that during the sixty years the sheep industry made a complete shift with the exception of a few counties in Pennsylvania and Ohio, so far as the concentrated centers of production are concerned. By reading the agricultural papers of this period one finds many references to these changes. A well-known Merino breeder of Vermont in one decade is heard from in the next decade from California where he is in the same business. The method of driving sheep from Ohio to Texas is described and in fact the student who has the time and ability can easily reconstruct the whole movement of the sheep industry from the days when Vermont and New York led in this industry to the present day with the Rocky Mountain states in the dominant position.[2]

GEOGRAPHIC FACTORS

The story is only half told, however, until it is explained. To explain these changes it becomes necessary to write the history of the expansion of American agriculture. The competition of the various farm enterprises has played an important part. The result of this competition is determined by geographic factors. Topography, climate, and nearness to the market are important examples.

In Vermont, New York, northeastern Ohio and in Wisconsin, wool growing was driven out by the dairy industry. This is indicated by contemporaneous literature. Statistics of the dairy industry were not collected in 1840, but the milk production, as shown for 1900, indicates the presence of this industry at the latter date in the regions which were in the earlier decades important centers of the sheep industry. The economic principle involved is simple. Wool is durable, dairy products are perishable. The value of wool per pound is much greater than milk and has often been greater than butter and cheese. The dairyman at a distance from the market for dairy products

[1] Each of these statements was illustrated by a dot map in the bulletin quoted.
[2] Also illustrated by a dot map in the bulletin quoted.

cannot compete with the one near the market so well as the shepherd in the distant hills and downs can compete with the wool grower near the center of population.

Beef cattle replaced sheep in Texas, the development of agriculture and fruit growing by irrigation was an important factor in California, and tariff legislation played an important part in forcing out the sheep in Ohio and Michigan during the nineties. A careful study of the operation of competitive forces, with and without artificial price levels, enables the student to discover the workings of the economic laws which have wrought the changes.[3]

Frederick Jackson Turner believed economists should know and use the historical approach in their efforts to formulate economic laws. Turner once said:

> The pathway of history is strewn with the wrecks of the "known and acknowledged truths" of economic law, due not only to defective analysis and imperfect statistics, but also to the lack of critical historical methods, to insufficient historical-mindedness on the part of the economist, to failure to give due attention to the relativity and transiency of the conditions from which his laws were deduced.[4]

In 1915 Louis B. Schmidt said:

> The agricultural economist needs to be familiar with the economic life of man in the past in order to realize and appreciate the organic nature of society. He should be historically minded if he would deal most efficiently with the problems of the present. With the introduction of the science of agricultural economics into the land grant colleges and universities of the country, therefore, comes a new motive for productive work in the field of agricultural history.
>
> The history of American agriculture, then, is essential to the development of a sound and farsighted rural economy. The great problems of rural communities are human rather than merely materialistic. That is to say, they are economic, social, and educational, and cannot be understood except in the light of their historical evolution. Government action involving agricultural interest should be based upon a broad knowledge of rural economic history. Questions of land tenure, tenancy, size of farms, markets (including the complex problems of distribution and exchange), capitalistic agriculture, the rise of land values, rural credits, farmers' organizations with their economic, social, intellectual, and political functions, the rural school, the rural church, and good roads: these are only a few of the vital problems which should be considered from an historical and comparative as well as from a purely technical point of view. Rural problems will henceforth demand a superior type of statesmanship, for we are to-day rapidly passing through a great transition period of our history. We have emerged from the period of colonization, of exploitation, of extensive development, and have entered the period of intensive development. There is a greater need than ever for calling upon the wisdom and experience of the past in the working out of a sound and farsighted rural economy. We are in need of a scientific treat-

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[3] H. C. Taylor, "The Place of Economics in Agricultural Education and Research," Wisconsin Agr. Exp. Sta. *Research Bulletin* 16 (Madison, June 1911), pp. 108–13.

[4] F. J. Turner, "Social Forces in American History," *American Historical Review*, 16(2):232 (January 1911). Presidential address before the American Historical Association, Dec. 28, 1910.

ment of the economic history of agriculture in this country to help supply this need. . . .

HISTORICAL STUDIES OF INDUSTRIES

The history of specific leading industries also remains to be written. As examples of what may be done in this direction we may indicate Hammond's "Cotton industry" and Thompson's "Rise and decline of the wheat growing industry in Wisconsin." Similar studies should be undertaken for cereal and live stock production, the latter including dairying and meat packing. The tobacco, poultry, and beet sugar industries should also be mentioned as profitable fields for research. The history of the range should be a particularly interesting subject for investigation. Such a study should give special attention to influences affecting the rise and growth of the industry, such as soil and climate, early trade and commerce, labor, tenancy, the use of improved machinery, markets, prices, transportation, and the tariff; and the relation of the industry to industries such as transportation, manufactures, mining, and lumbering should be considered. The westward movement of the centre of production should be studied in its relation to the westward movement of population and the accessibility of markets. The influence of agricultural prices on production, and the influence of grain markets on national politics and finance should receive careful study. Mr. Turner has called attention to the importance of the study of the wheat industry, in the following terms:

"If, for example, we study the maps showing the transition of the wheat belt from the East to the West, as the virgin soils were conquered and made new bases for destructive competition with the older wheat states, we shall see how deeply they affected not only land values, railroad building, the movement of population and the supply of cheap food, but also how the regions once devoted to single cropping of wheat were forced to turn to varied and intensive agriculture and to diversified industry, and we shall see also how these transformations affected party politics and even the ideals of the Americans of the regions thus changed.[5]

REGIONAL ECONOMIC HISTORY

The economic history of agriculture in particular states or in given regions should also be written. Such studies should include the consideration of agricultural geography, Indian agriculture, early trade and travel, relations of the white race with the Indian, pioneer population and agriculture, nearness to the markets, transportation of agricultural products, development of specialized and diversified farming, systems of land tenure, agricultural labor, use of improved farm machinery, size of farms, price of lands, and rentals, and laws governing inheritance of real estate in lands. These studies would naturally include also the consideration of the sources of immigration, the type of farmers, the methods of agriculture, and the social phases of life, including religion, education, amusements, and entertainments. Attention should be given to currency and banking facilities, rural credit, rates of interest, and the relation of the farming population to national monetary legislation and to the tariff. The subject of agricultural education should receive extended treatment: a study of state agricultural societies and fairs, the agricultural press, and the agricultural colleges and experiment stations, including rural extension departments and recently introduced courses in agriculture in the high schools. Finally, the economic history of agriculture of any state should present an historical and comparative analysis of the problems con-

[5] Turner, "Social Forces," pp. 229, 230.

fronting the farming class. Mr. E. V. Robinson's "Economic history of agriculture in Minnesota," [6] just published, suggests the possibilities and the value of this type of study. . . .

. . . the economic history of American agriculture is a constituent part of the history of the entire people, closely interwoven with other phases of our national progress; and to define it is to emphasize a new point of view in the study of American development. "The marking out of such a field is only a fresh example of the division of scientific labour: it is the provisional isolation, for the better investigation of them, of a particular group of facts and forces," in order that a true history of our national progress and development may finally be written.[7]

Poore and Flint

Samples of earlier writings on the history of agriculture are found in the United States Department of Agriculture annual reports. In the report for 1866 there is an article by Ben: Perley Poore on the "History of the Agriculture of the United States,"[8] including Indian agriculture, Spanish colonial agriculture, Puritan English colonists, the Cavalier English colonists, the French colonists, followed by a study of agriculture of Revolutionary times and correspondence between Sir John Sinclair, President of the Board of Agriculture in England, and Richard Peters, of the Philadelphia Society for Promoting Agriculture. There are paragraphs on the establishment of agricultural fairs, and on sheep shearing on the Arlington Farm which was then occupied by George Washington Parke Custis. We do not find in that article any effort to trace the economic forces which determine what farmers do or what they should do, but there is much praise of agriculture as an occupation and continuous reference to agricultural societies and other agencies which stimulate the improvement of agriculture.

In the report of the United States Department of Agriculture for 1872 there is an article by Charles L. Flint in which he said:

During the period of the Revolution farm production was brought to a partial stand-still, and, for some years after, it was in a state of extreme depression. It took time to recover from the effects of the struggle. Gradually, however, the importance of some effort to develop and improve the agriculture of the country was impressed upon the minds of the more intelligent and public-spirited of the people, men, for the most part, who were in advance of their time. The result of their deliberations was the formation of societies for the encouragement of agricultural improvement. Thus the South Carolina Agricultural Society was established in 1784; the Philadelphia Society for Promoting Agriculture, in 1785; the New York (city) Society, in 1791; the Massachusetts Society for Promoting Agriculture, in 1792. These were rather city than country institutions. They were very slow in reaching the

[6] E. V. Robinson, *Early Economic Conditions and the Development of Agriculture in Minnesota,* Bulletin of the University of Minnesota, Studies in the Social Sciences, No. 3 (Minneapolis, 1915).

[7] L. B. Schmidt, "The Economic History of American Agriculture as a Field for Study," *Mississippi Valley Historical Review,* 3:43–49 (June 1916). See also L. B. Schmidt and E. D. Ross, editors, *Readings in the Economic History of American Agriculture* (New York: Macmillan Co., 1925).

[8] B. P. Poore, "History of the Agriculture of the United States," in U. S. Commissioner of Agriculture, *Report,* 1866 (Washington, 1867), pp. 498–527.

common people. The average farmer of that day was not up to their standard of thought and observation. Their example, their teachings, their entreaties for aid, their reports and papers, fell comparatively dead upon the mass of the people. Farmers were not to be taught by men who never held the plow. They did not want anything to do with *theories.* Custom had marked out a road for them, and it was smooth and easy to travel, and, though it might be a circle that brought up just where it had started, it had the advantage, in the old farmer's mind, that in it he never lost his way. It didn't require any exertion of mind. His comfort, as well as his happiness, was based on a feeling of filial obedience to old usage that was hereditary in his being. It was born in the blood, and ruled him with an irresistible power. His field of vision was bounded and narrow, and his work was strictly *imitative,* so far as he could see, and in no way *experimental.* The old common law, based on precedent, custom, practice, was his guide and his rule. He would be governed by custom, not by reason. If ancient custom was *known,* that was good enough for him. It wasn't for him to doubt. To investigate would imply doubt. To investigate was to theorize. Theory is at the bottom of all investigation, and theory was a bugbear in his mind. The logical result – that no improvement could be reached without investigation – had no terrors for him. He seldom read. The *written* word he received with distrust. It might contain principles, and it wasn't principles that he cared anything about, but *practice.* No matter whether founded on wisdom and experience or not, practice was the thing. . . .

But time brings its changes. Something more was felt to be needed, and a convention was held in Georgetown, in the District of Columbia, on the 28th of November, 1809, from which grew the Columbian Agricultural Society for the Promotion of Rural and Domestic Economy; and the first exhibition, probably, in this country, was held by that society on the 10th of May, 1810, with the offer of liberal premiums for the encouragement of sheep-raising, etc. . . .

But these changes and improvements were not readily adopted by the farming community. . . .

. . . Few and feeble enough at first, and slow in the growth of their influence among the people, they [the agricultural societies] have now become a powerful aid in the progress of all departments of agricultural knowledge, and have grown up to a harmonious system of national, State, county, and township organizations, all active, not only in gathering and diffusing information, but furnishing a constant stimulus to new effort and to higher triumphs of practical skill.

To the earnest spirit of inquiry which these societies awakened in the community is due, in a great measure, the growth and respectability of the agricultural literature of the country. With the exception of four brief "Essays on Field-Husbandry," by the Rev. Jared Eliot, of Connecticut, the first of which is dated in 1747, I know of no agricultural book printed in the colonies previous to the Revolution, and all that followed that event for many years consisted chiefly of the more or less valuable papers submitted to the Massachusetts, the Philadelphia, and the New York societies, till the American Farmer was started in Baltimore in 1819. This is believed to have been the first regular strictly agricultural journal published in the United States. . . .

The permanent agricultural literature of the country, now so extensive and so creditable, has grown up, for the most part, within the last twenty years. A few books of a high character appeared, from time to time, forty or fifty years ago, among them Coxe on *Fruit-Trees;* Thacher's *American Orchardist; Arator,* by Colonel Taylor, of Virginia; Fessenden's *Complete Farmer,* Buel's *Farmer's Companion,* &c, but a large proportion of the farmer's

reading, previous to 1850, consisted of English works, many of which were reprinted in this country.[9]

Francis A. Walker

In 1882 Francis A. Walker, who had been serving as director of the United States Bureau of the Census, published an article on "American Agriculture,"[10] which gives a general view of the agriculture of the United States under six titles as follows:

1. As to the tenure of the soil.
2. As to character of the cultivators as a class.
3. As to the freedom and fullness of experiment upon the relations of crops to climate and to local soils.
4. As to what has been done biologically to promote our agriculture.
5. As to what has been done mechanically.
6. As to what has been done chemically. Under which title we shall have occasion to explain the westward movement of the field of cultivation of wheat and corn and the southwestward movement of the cotton culture.[11]

Walker's statement with regard to the way in which the soil was being exploited was similar to a statement in the census volume on agriculture for 1860,[12] in which it was pointed out that what farmers did was to utilize the soil's fertility before commencing to put in a fresh supply, and justified it on the ground that it provided an income to be used in building up the capital resources of the area, that is, farm houses, barns, school houses, churches, etc., as well as other farm and road improvements.

William H. Brewer

In the same volume of the census in which Walker's article on "American Agriculture" was reprinted, William H. Brewer presented a statement on the "History of American Agriculture." Brewer divided the history into epochs:

> The history of agriculture in the United States, particularly as it is related to grain production, falls naturally into four periods.
>
> The first period is that of our colonial days, extending over about one hundred and sixty or one hundred and seventy years, or from the first settlement down to the American Revolution, and may be called the period of experiment.
>
> The second, beginning with the Declaration of Independence, extends over a period of about fifty years, or to the time when the cast-iron plow came into common use throughout the country. This was the period of awakening,

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[9] C. L. Flint, "A Hundred Years' Progress," U.S.D.A., *Report,* 1872 (Washington, 1874), pp. 282–83, 301–02.

[10] F. A. Walker, "American Agriculture," *Princeton Review,* pp. 249–64 (May 1882). This article, with an addendum, was reprinted in the *Agricultural Review and Journal of the American Agricultural Association* 2:89–104 (August 1882), and in the U. S. Census Office, 10th Census, 1880, *Report on the Productions of Agriculture* (Washington, 1883), 3:28–33.

[11] Walker, "American Agriculture," *Princeton Review,* p. 249.

[12] U. S. Census Office, 8th Census, 1860, *Agriculture of the United States in 1860* (Washington, 1864), pp. viii–x.

of the formation of agricultural societies, and of the beginning of a science of agriculture.

The third period, of about thirty years, began when the introduction of the cast-iron plow was complete, say about 1825, and extended to the time when the reaper began to come into common use, about 1855. During this period thrashing-machines, which had really been invented long before, became universally used; railroads began to be built and grew to considerable proportions, commercial fertilizers came into use, and advances were made in numerous other directions.

The fourth period began when the reaper became common, and extends to the present time. It includes the introduction into general use of the steam-thrasher, of improved harvesters and reapers, and the farther improvement of many labor-saving machines previously invented, a marked extension in the land transportation of grain by railways, the use of the elevator in handling grain, the ocean transportation of grain by steam, and the greater specialization of agricultural productions.

Each of these epochs or eras in our agricultural history is correlated with political and social events happening here or elsewhere about the same time, which make these dates important ones in the history of the world's material and intellectual progress, the agricultural changes in our country being but phases of a general progress in the industrial arts which has gone along with the growth and development of the physical sciences and the spread of political and religious liberty.[13]

Frederick Jackson Turner

A new impulse to the writing of history, with the pioneer farmer in the center of the stage, was given in 1893 when Frederick Jackson Turner read his epoch-making paper on "The Significance of the Frontier in American History."[14] Turner said:

> The exploitation of the beasts took hunter and trader to the West, the exploitation of the grasses took the rancher west, and the exploitation of the virgin soil of the river valleys and prairies attracted the farmer. Good soils have been the most continuous attraction to the farmer's frontier. The land hunger of the Virginians drew them down the rivers into Carolina, in early colonial days; the search for soils took the Massachusetts men to Pennsylvania and to New York. As the eastern lands were taken up migration flowed across them to the west. Daniel Boone, the great backwoodsman, who combined the occupations of hunter, trader, cattle-raiser, farmer, and surveyor, learning, probably from the traders, of the fertility of the lands on the upper Yadkin, where the traders were wont to rest as they took their way to the Indians, left his Pennsylvania home with his father, and passed down the Great Valley road to that stream. Learning from a trader of the game and rich pastures of Kentucky, he pioneered the way for the farmers to that region. . . .
>
> The farmer's advance came in a distinct series of waves. In Peck's *A New*

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[13] W. H. Brewer, "History of American Agriculture," U. S. Census Office, 10th Census, 1880, *Report on the Productions of Agriculture* (Washington, 1883), 3:513.

[14] A paper read at the meeting of the American Historical Association in Chicago, July 12, 1893, and again at the meeting of the State Historical Society of Wisconsin in Madison on Dec. 14, 1893. It was published in the American Historical Association, *Annual Report*, 1893 (Washington, 1894), pp. 199–227. It was also published in the State Historical Society of Wisconsin, *Proceedings*, 1893 (Madison, 1894), pp. 79–112, with the following note: "The foundation of this paper is my article entitled 'Problems in American History,' which appeared in *The Ægis*, a publication of the students of the University of Wisconsin, Nov. 8, 1892." The paper is reprinted as the first chapter in Turner's book entitled *The Frontier in American History* (New York: Henry Holt and Company, 1920).

Guide to the West, published in Boston in 1837, occurs this suggestive passage:

"Generally, in all the western settlements, three classes, like the waves of the ocean, have rolled one after the other. First comes the pioneer, who depends for the subsistence of his family chiefly upon the natural growth of vegetation, called the 'range,' and the proceeds of hunting. His implements of agriculture are rude, chiefly of his own make, and his efforts directed mainly to a crop of corn and a 'truck patch.' The last is a rude garden for growing cabbage, beans, corn for roasting ears, cucumbers, and potatoes. A log cabin, and, occasionally, a stable and corn-crib, and a field of a dozen acres, the timber girdled or 'deadened,' and fenced, are enough for his occupancy. It is quite immaterial whether he ever becomes the owner of the soil. He is the occupant for the time being, pays no rent, and feels as independent as the 'lord of the manor.' With a horse, cow, and one or two breeders of swine, he strikes into the woods with his family, and becomes the founder of a new county, or perhaps State. He builds his cabin, gathers around him a few other families of similar tastes and habits, and occupies till the range is somewhat subdued, and hunting a little precarious, or, which is more frequently the case, till neighbors crowd around, roads, bridges, and fields annoy him, and he lacks elbow room. The preëmption law enables him to dispose of his cabin and corn-field to the next class of emigrants; and, to employ his own figures, he 'breaks for the high timber,' 'clears out for the New Purchase,' or migrates to Arkansas or Texas, to work the same process over.

"The next class of emigrants purchase the lands, add field to field, clear out the roads, throw rough bridges over the streams, put up hewn log houses, with glass windows and brick or stone chimneys, occasionally plant orchards, build mills, schoolhouses, court-houses, etc., and exhibit the picture and forms of plain, frugal, civilized life.

"Another wave rolls on. The men of capital and enterprise come. The settler is ready to sell out, and take the advantage of the rise in property, push farther into the interior and become, himself, a man of capital and enterprise in turn. The small village rises to a spacious town or city; substantial edifices of brick, extensive fields, orchards, gardens, colleges, and churches are seen. Broadcloths, silks, leghorns, crapes, and all the refinements, luxuries, elegancies, frivolities and fashions are in vogue. Thus wave after wave is rolling westward — the real *el dorado* is still farther on.

"A portion of the two first classes remain stationary amidst the general movement, improve their habits and condition, and rise in the scale of society.

"The writer has traveled much amongst the first class — the real pioneers. He has lived many years in connexion with the second grade; and now the third wave is sweeping over large districts of Indiana, Illinois and Missouri. Migration has become almost a habit in the West. Hundreds of men can be found, not 50 years of age, who have settled for the fourth, fifth, or sixth time on a new spot. To sell out and remove only a few hundred miles makes up a portion of the variety of backwoods life and manners."[15]

Omitting those of the pioneer farmers who move from the love of

[15] J. M. Peck, *A New Guide for Emigrants to the West* (Boston: Gould, Kendall and Lincoln, 1837, Second Ed.), pp. 119–20. Several editions of Peck appeared; the earliest seems to have been 1831. Compare Francis Baily, *Journal of a Tour in Unsettled Parts of North America* (London: Baily brothers, 1856), pp. 217–19, where a similar analysis is made for 1796. See also Georges Henri Victor Collot, *A Journey in North America* (Paris: A. Bertrand, 1826), p. 109; North American Land Company, *Observations on the North-American Land-Company* (London: printed by H. L. Galabin for C. Barrell and H. Servanté, 1796), pp. xv, 144; John Henry Logan, *History of Upper Country of South Carolina,* Vol. 1 (Charleston: S. G. Courtenay & Co., Columbia, P. B. Glass, 1859).

AUTHORS' NOTE: In order to facilitate the work of the research student the authors have amplified Turner's footnote (No. 15) by completing titles, and the names of authors and publishers.

adventure, the advance of the more steady farmer is easy to understand. Obviously the immigrant was attracted by the cheap lands of the frontier, and even the native farmer felt their influence strongly. Year by year the farmers who lived on soil whose returns were diminished by unrotated crops were offered the virgin soil of the frontier at nominal prices. Their growing families demanded more lands, and these were dear. The competition of the unexhausted, cheap, and easily tilled prairie lands compelled the farmer either to go west and continue the exhaustion of the soil on a new frontier, or to adopt intensive culture. Thus the census of 1890 shows, in the Northwest, many counties in which there is an absolute or a relative decrease of population. These States have been sending farmers to advance the frontier on the plains, and have themselves begun to turn to intensive farming and to manufacture. A decade before this, Ohio had shown the same transition stage. Thus the demand for land and the love of wilderness freedom drew the frontier ever onward.[16]

Agricultural History Stimulated by the University of Wisconsin

As the leading center of the study of costs of production was at the University of Minnesota, and the leading center in the development of the survey method of studying farm management was at Cornell University, the leading center for stimulating the use of the historical and geographical approach in the study of farm economic problems was at the University of Wisconsin. Primary stimulus given by Professor Richard T. Ely to the historical approach in the study of economic questions was ably supported by his colleagues, Professors Frederick Jackson Turner and William A. Scott. Students with an agricultural interest were not only stimulated to study agricultural aspects of economic history, but were encouraged to write their doctoral dissertations on some phase of agricultural history.[17]

M. B. HAMMOND — COTTON INDUSTRY

The first of the students of Ely and Turner at Wisconsin to write a monograph on agricultural history was Matthew Brown Hammond, who took his master's degree at Wisconsin in 1893. The extent to which Hammond was stimulated by contacts with Ely and Turner to write his monograph on *The Cotton Industry*[18] has not been determined. Hammond studied at two universities in Germany and two, other than Wisconsin, in the United States. Hammond stated in the preface that "Various portions of the monograph have been read in manuscript and criticized by . . . Professor F. J. Turner of the University of Wisconsin." Furthermore, it was well known that Ely often spoke of Hammond as one of his students. Whatever the source of the stimulus, the content of the monograph indicates Hammond's interest in agricultural economics. That interest is

[16] Turner, *The Frontier in American History* (New York: Henry Holt and Company, 1920), pp. 18–20.

[17] R. T. Ely was at the University of Wisconsin 1892–1925; W. A. Scott was there 1892–1932, and F. J. Turner 1889–1910.

[18] M. B. Hammond, *The Cotton Industry: An Essay in American Economic History*, Part I, *The Cotton Culture and the Cotton Trade*, American Economic Association, *Publications*, n. s., No. 1 (December 1897).

further indicated by the fact that Hammond offered the courses in "Agricultural Problems" and in "Economics of Agriculture" at the University of Illinois from 1897 to 1900.[19]

Hammond's monograph is an important contribution to the economic history of southern agriculture. In Book I of that monograph Hammond dealt with "The Cotton Culture in the United States." He described southern agriculture under the plantation system, pointing out the problems that arose after the Civil War and the way in which a system of hired labor failed in the early days following emancipation, and the way in which the cropper system became dominant. He pointed out difficulties arising from the credit system and the way in which that system bound the planters to the production of cotton as the one crop on which they could secure credit. He stated the causes of over-production of cotton, which he laid at the door of the credit system and the tenant system, and advocated a wage system to take the place of the cropper system. But the 35 years of experience, from 1897 to 1932, had not demonstrated the superior value of the wage system over the cropper system in the production of cotton by either Negro or white labor. The following excerpts give the outstanding points made in Book I:

> The wage system, although never universally adopted in the cotton belt, seems to have been the prevailing one for the first year or two immediately following the war. The results of these few years of experiment plainly showed that, although this system had some important advantages for southern agriculture[20] . . . .
>
> . . . the Negro would often desert the corn or cotton fields when they most needed attention, and many crops, even after a successful cultivation, were left ungathered for want of laborers to harvest them. . . .
>
> For these reasons the wage system was usually abandoned after the first year's trial,[21] and those planters who continued it did so with greatly reduced wages. . . .
>
> The increase in small farms as shown by a comparison of the number and average size of land holdings in the South in 1860 and 1870, was general throughout the entire cotton belt, and was therefore in marked contrast with the condition of affairs during the decade 1850–60, when the average size of farms in the western states had increased. Between 1860 and 1870 the average size of farms in the cotton belt decreased from 401.7 acres to 229.8. . . .
>
> The system which soon became the all but universal method of farming the cotton lands by Negro labor, was the "share system," more commonly known in the South as the "cropping system." . . .
>
> The one general idea which ran through the plans that now found favor in various localities, was that the laborer should be given some interest in the crop. . . .
>
> Throughout the greater part of the cotton belt, however, the share system seems to have taken the direction of giving the laborer, not a portion of the land to cultivate, but a share of the crop which he raised for the planter. The Negro tenant who furnished his own tools, seed and mules, usually received two-thirds of the crop, sometimes three-fourths of the cotton.

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[19] See University of Illinois, *Catalogues,* 1897–98 through 1899–1900.

[20] Cf. F. W. Loring and C. F. Atkinson, *Cotton Culture and the South, Considered With Reference to Emigration* (Boston: A. Williams and Co., 1869), pp. 28–30.

[21] U. S. Commissioner of Agriculture, *Report,* 1867 (Washington, 1868), p. 416.

It was not often, however, that the Negro was able to furnish the capital, and when he supplied only his own rations and had a house and garden and all the work animals and implements for cultivating the land furnished him, he seldom received more than one-half the crop.[22]

HENRY C. TAYLOR — LANDOWNING FARMERS

In the winter of 1899–1900, H. C. Taylor prepared his doctoral thesis on "The Decline of Landowning Farmers in England."[23] He had been under the influence of Ely, Scott, and Turner for three years prior to going to England in 1899 to study English agriculture and land tenure. He had given much time to the study of English economic history. In 1893, the reading of *The New Era,* by Josiah Strong,[24] had aroused his interest in the problem of maintaining the class of landowning farmers in the United States.

Taylor hoped that a study of the causes of the decline of landowning farmers in England might give a clue to the means of retarding a similar movement in the United States. He spent 50 days bicycling through England, Scotland and Ireland, visiting farmers and landlords to make inquiry with regard to the type of farming and method of leasing land. Where landowning farmers were found, they were interviewed. Those conversations with British farmers and landlords, or their agents, gave Taylor a picture of what existed in 1899 and some information as to how the system developed and how it was working. The next five months were spent in London attending the London School of Economics and working in the library of the British Museum with the hope of finding recorded facts which would tell the story of the earlier existence of landowning farmers in England and the causes for their almost complete disappearance. The method of procedure was to work from the known to the unknown in gathering and interpreting material. Little by little the changes which had brought about the 1899 situation were outlined.

Many men were consulted to make certain of a correct understanding of statements made in the seventeenth and eighteenth centuries. The Reverend William Cunningham, economic historian at Cambridge, and Sir Frederick Pollock, of London, were interviewed about the meaning of terms used by Gregory King in his statement as to the number of farmers of different classes in 1688. Little light was thrown on the subject by that method. To find the ways in which the terms "farmer," "yeoman," and "statesmen" were used at that time, contemporary literature was read and the sense in which the terms were used was noted. It was found that "farmer" meant rent-paying husbandman, while a "yeoman" or a "statesman" was one

[22] Hammond, *The Cotton Industry,* pp. 125–26, 128–29, 131–33.

[23] H. C. Taylor, "The Decline of Landowning Farmers in England," University of Wisconsin *Bulletin* 96, Economics and Political Science Series, 1(1):1–66 (Madison, 1904). (Ph. D. Thesis, University of Wisconsin, Madison, 1902.)

[24] J. Strong, *The New Era, or The Coming Kingdom* (New York: The Baker & Taylor Co., 1893).

who owned the land he tilled. These details describe briefly Taylor's application of the historical approach to a specific problem. For further consideration of his thesis, see the section on land economics.

BENJAMIN H. HIBBARD — AGRICULTURE IN DANE COUNTY

In the year 1901–02 Benjamin Horace Hibbard, while a graduate student at the University of Wisconsin, wrote his Ph.D. thesis on "The History of Agriculture in Dane County, Wisconsin."[25] In deciding upon his thesis subject, he consulted Professors Ely and Scott, of the Department of Economics, and received special inspiration from Frederick Jackson Turner, Professor of American History.

Hibbard's monograph shows clearly that it was written by a student of economics rather than by a student of history. It is a study of those economic forces which determined what farmers did in the choice of land, choice of crops, and choice of livestock enterprises. The monograph covers a period when the state of Wisconsin was being settled and when farmers were trying to discover the type of farming which would best enable them to make a living and get ahead in the world. One of the first economic questions discussed in the monograph had to do with the selection of land. Hibbard said:

> Whether or not the first settlers chose the best land is a question which has long been in dispute. . . . Without doubt the early farmers were "economic men" to the extent that they intended to take, other things being equal, the most productive land available; but it must not be forgotten that production meant to them, just as it does to an economist, the return for outlay; or it may not be overstating the case to say they were looking for the greatest net gain. . . . They took the land that promised in their judgment, the greatest reward within the near future; but in the matter of judgment there was a great lack of uniformity.[26]

Hibbard concluded that in choosing land the farmer undertook to do that which he believed to be to his greatest economic interest. That basic assumption runs through all the chapters of monograph and relates equally well to the choice of crops and livestock enterprises. His final quoted phrase above has also been true of the choice of crops and livestock enterprises as well as for the choice of land. It is interesting to note the way in which the farmers, who were the real experimenters in the early days, determined the type of agriculture which Wisconsin should have.

The monograph described the rise and decline of the wheat industry as a pioneer crop that had to give way to other lines of production as the country grew older, as more capital was available, and as keener competition came from areas west and south which had been opened by the development of railroads. Of the crops which were experimented with and which are discussed in the mono-

[25] B. H. Hibbard, "The History of Agriculture in Dane County, Wisconsin," University of Wisconsin *Bulletin* 101, Economics and Political Science Series 1(2):67–214 (Madison, 1904). (Ph. D. Thesis, University of Wisconsin, Madison, 1902.)

[26] Hibbard, "Dane County," p. 105.

graph, sugar, honey, flax (for seed and fiber), and hemp are examples of crops which never became important. Hops were introduced during a period of crop failure due to insect pests in New York, but that crop had a meteoric rise and fall. The insect pests arrived in Wisconsin about the time the market price declined owing to the rehabilitation of that line of production in New York State, and the Wisconsin hop industry passed out. Tobacco production and the keeping of cows lingered long as of little commercial importance during the earlier part of the period of the state's settlement, but in due course the dairy enterprises became the outstanding sources of income on Wisconsin farms. Tobacco became an important cash crop in certain southern counties.

Climatic and economic factors of inter-regional agricultural competition which brought the dairy industry into first place in importance in the agriculture of Wisconsin were so powerful as to transform the habits of the people. The dairy industry grew rapidly after 1870. First the butter industry was of primary importance, and in due course the cheese industry was developed. Of the influence of the dairy industry on the habits of the people, Hibbard said:

> Probably dairying has worked a greater change in the people engaged in it than has any other kind of agriculture in the state. During the wheat period it was customary for the German to get up early, harness his team, eat a light breakfast, and at six, or six-thirty o'clock, go to the field, where in a slow but steady and painstaking way he would plod along at his work, stop about ten for lunch of brown bread with ham or sausage and a few cups of coffee, take an hour or a little more for his dinner, repeat the program in the afternoon, reaching the house a little before dusk even in the longest days, and after taking the harness from his horses, and eating supper, go to bed; the "chores" were invariably left to his *Frau*. This routine in a little less methodical manner was carried out by other foreigners and even by many Americans, though the latter always worked fewer hours and at a brisker pace. These various nationalities have all gone into dairying, and their habits of work have undergone a transformation. They still must arise early in the morning but the first duty is to get the milk started to the factory and in this the boys and girls have a part. Breakfast comes at a later hour and by the time the teams are started to the field the sun is high. The leisurely manner of the farmer of a generation ago will not do now, and with a fast-moving team, with little lingering at the ends of the field, with the lunches omitted, the Germans as well as the rest have adopted the genuine American hustle.[27]

We do not find that Hibbard pointed out, as did Joseph Schafer,[28] that in shifting from wheat to dairying the process was not wholly that of changing the habits of all of the people but rather that of changing the habits of those who were willing to adapt themselves to the dairy industry, while many others moved farther west to continue their old habits in wheat production.

The outstanding characteristic of Hibbard's monograph is that

[27] Hibbard, "Dane County," p. 102.
[28] See pp. 294–97.

it is a descriptive study of economic forces in action in a given state in a period when dynamic forces were causing uneasiness and continuous shifting. It is probably true that more change took place in Wisconsin between 1870 and 1890 that determined the type of Wisconsin agriculture than took place in the 36 years from 1896 to 1932.

The work of John G. Thompson[29] and that of Joseph Schafer brought out many details of the agricultural history of Wisconsin, but the Hibbard monograph is the pioneer document in that field in that state. In general outline, the contributions of the Hibbard monograph to the economics of agricultural production in Wisconsin remains the classic on this subject. Had a similar monograph been prepared on the agriculture of each state in the Union, as a starting point for studying the economics of farm management in the area covered, agricultural economics would have had a better start in this country than it has had. If 10 per cent as much money as has been spent on the detailed study of individual farms and the development of statistical averages with regard to conditions at a given time on groups of farms, had been devoted to the historical study of economic forces which determined what farmers were doing at the given time and place, a far better understanding of economic principles of farm management would have resulted. Furthermore, agricultural economists and farmers would have had a dynamic point of view and would have been far better prepared than they were for the emergencies which arose following World War I (1914–1918).

In reviewing Hibbard's monograph in the *Yale Review,* Guy Stevens Callender, Professor of Political Economy at Yale, made the statement: "It is only by multiplying such special studies of selected localities that we shall ever arrive at any comprehension of our agricultural economy, or appreciate the practical economic problems that concern that part of our population."[30]

JOHN G. THOMPSON — WHEAT IN WISCONSIN

John Griffin Thompson wrote his thesis on *The Rise and Decline of the Wheat Growing Industry in Wisconsin.*[31] Thompson accounted for the spectacular rise and rapid decline of wheat growing in Wisconsin by noting that it was the easy and quick method of securing a return from the land. The development of railroad transportation first stimulated wheat production, and then as the railroads went on to the West they brought competition which discouraged wheat

[29] See below.

[30] G .S. C.[Guy Stevens Callender], Book Review in *Yale Review,* 15:314–15 (November 1906).

[31] J. G. Thompson, "The Rise and Decline of the Wheat Growing Industry in Wisconsin," University of Wisconsin *Bulletin* 292, Economics and Political Science Series, Vol. 5, No. 3 (Madison, 1909). (Ph. D. Thesis, University of Wisconsin, Madison, 1907.) This monograph is documented with long footnotes, some of which are omitted from quotations used in this text.

This was one of the monographs stimulated by the Division of Agriculture and Forestry of the Carnegie Institution of Washington. See Carnegie Institution of Washington, *Yearbook,* 8:72–73 (Washington, 1909).

production in Wisconsin. The story of the displacement of wheat, first by general farming, then by dairying and tobacco growing, is a significant human story showing how the lack of skills and capital had to be overcome. It demonstrates that in such circumstances organized adult educational efforts are exceedingly valuable in making it possible for people to change from an extensive type of farming, like wheat growing, to an intensive type of farming, like tobacco growing or dairying, each of which requires its special skills and largely increased supplies of capital. Thompson said:

> . . . the most important and most ultimate of the causes operating both in the rise and in the decline of the wheat industry in Wisconsin, as elsewhere, was the existence of cheap, fertile lands — first, within that state, and then beyond its borders — supplemented by the introduction of railroads — first, into Wisconsin, and then into the new regions beyond.
>
> Of the other causes operating in the same direction, the most potent and that most commonly asserted to be the primary cause of the decline of wheat growing in Wisconsin was exhaustion of the soil, induced by exclusive cropping to wheat with little or no rotation and by other reckless and wasteful methods of cultivation, and leading finally to declining yield such that wheat growing became unprofitable. . . .
>
> . . . when the first great break in wheat growing came in Wisconsin, in the decade 1870–1880, there was a tendency toward general farming rather than toward specialization in any particular branch of farming. . . .
>
> After a time the tendency toward diversified agriculture which had in large measure displaced wheat growing in Wisconsin, gave way in its turn to a reaction toward more specialized forms of farm industry again. . . . Of these specialized forms of industry, the growing of tobacco and dairying were the most important.[32]
>
> . . . The slow progress in this direction [attempts to introduce the culture of tobacco] for many years was due simply to the fact that the conditions that favor wheat growing are unfavorable for the cultivation of tobacco. . . . The successful cultivation of tobacco requires, relatively, a minimum amount of land, highly intensive culture, considerable intelligence of a special kind and much labor and capital. Quantitatively speaking, nature does little and man, much, in the culture of tobacco. . . .
>
> Somewhat similar conditions prevented the rise of dairying to importance in earlier days. . . . Capital . . . was lacking for the purchase of cows of good quality and for the erection of barns and fences. . . .
>
> . . . Partly as a result of the united efforts of the dairymen of Wisconsin for a higher standard of quality and partly as a result of the development of refrigerated transportation, their products were soon recognized to be as good as the best. There is no longer any question of the highly favorable natural advantages for dairying in Wisconsin. . . .
>
> . . . it appears that, in accordance with past experience, we may expect a continued movement of the wheat growing area of the world generally, into the relatively less developed regions that are adapted to that crop, until the tendencies that operate toward the equalization of economic conditions between competing areas have worked out their ultimate effects; and such a consideration probably points to a relative decline in the extent of wheat growing within the United States as a whole for an indefinite period in the future.[33]

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[32] The raising of potatoes, barley and sugar beets constitute other less important examples.
[33] Thompson, *Wheat Growing in Wisconsin*, pp. 159, 164–69, 184.

It has been said that had Thompson called his monograph the rise of the dairy industry in Wisconsin it would have attracted much attention. In fact that title would have been as fitting as the one used so far as the content is concerned. When the monograph was published the wheat growers were gone but the dairy industry was still making rapid growth.

JOSEPH SCHAFER — AGRICULTURE IN WISCONSIN

Joseph Schafer, a student of history at Wisconsin in Turner's day, and later Superintendent of the State Historical Society, Madison, Wisconsin, was another contributor to the agricultural history of the period dealt with by Hibbard and Thompson. Hibbard said of him, "Schafer is one of Turner's intellectual children — a real student."[34] While Schafer's writing were published at a much later date, they can be presented best at this point because of the way in which they contribute to a more complete understanding of the forces and conditions affecting the development of agriculture in Wisconsin. Schafer's work was less narrowly focused upon economic forces and gave more attention to other social forces than did the work of Hibbard and Thompson. Thus it covered more territory than Hibbard's, covered more subject matter than Thompson's, and was more sociological than either of the other two. It was Schafer's view that:

> It should prove possible to learn something about the origins of social forces that modify history and to gauge their strength under varying conditions. We may even hope to learn how beneficial social or economic tendencies are promoted and what prophylaxis nature provides against tendencies which are socially untoward. . . .
>
> . . . Economics and sociology are, to a very large extent, applied history. Has not the student of history a right to make his own applications of the results which his studies reveal, provided he is equipped for social or economic reasoning? Whether the historian makes the applications or not, his results must be in such form as to enable the students of modern progress to apply them. Speaking modestly, and subject to correction, I believe that a large part of the inconclusive reasoning to be found in many treatises on economics, sociology, and political science is due to the incompleteness and inconclusiveness of the work of historians which must necessarily underlie such reasoning. The more thoroughgoing and accurate the interpretation of history can be made, the simpler will be the problem of charting the course along which society is to move in the future.[35]

With the purpose stated above, Schafer selected specific areas for intensive study which represented distinct differences in conditions:

> The thirty-one towns enclosed within the boundaries of the four counties treated herein are contiguous. In effect, we are dealing in the present volume with a region, or, to be exact, two regions in which characteristic phases of state history had their beginnings and their logical development. Into the southern pair of counties, Kenosha and Racine, where the land was invit-

[34] In an interview by Anne Dewees on May 22, 1940.
[35] J. Schafer, "The Microscopic Method Applied to History," *Minnesota History Bulletin*, 4:15–16, 19–20 (February-May, 1921).

ingly open to settlement either in the form of "oak openings" or of prairie, pressed the early-coming immigrants from New York, New England, and subsidiary portions of Yankeeland, with some others both native and foreign. Bringing with them some money and farming equipment, or the credit requisite to supply these as well as to purchase government lands, they entered at once upon a comparatively large scale production of wheat and quickly made valuable farms. Into the heavily forested region of Milwaukee and Ozaukee counties filtered the somewhat later-coming Germans, with other foreigners and Americans who coveted a lake-shore farming opportunity. A large proportion of these were devoid of funds, depending on their personal labor force to make a living and gradually to improve the small tracts of woodland upon which they settled. The process of making farms there, our researches revealed, was the labor of a generation.

In the facts that the two districts of the area were originally occupied by settlers of different origins and unequal circumstances, and that their agricultural history accentuated the usual contrast between an open land economy and a forest land economy, we have the key to the general history of the four counties. So deep-running was the influence of the originally contrasted covering of the land, that it was thought proper to use the descriptive phrase "Prairie and Forest" as a sub-title of the book.[36]

In speaking of the reasons American settlers from the East took the prairie land and many German immigrants settled in the heavy timber, Schafer said:

> . . . the ideal farm, to the American settler, was a combination of timber, prairie or opening, and marsh — for fuel and shelter, cultivation, and hay or pasture . . . [One] writer speaks of the "murderous toil" of clearing a farm in the heavy timber, which he regards as a life job for the unfortunate settler. Why, then, did so many German immigrants elect to spend their lives in making farms under those conditions?
>
> The answer is found, by analogy, in this other question: Why do the poorer people, in every crowded city, live on the low grounds, while the well-to-do occupy the high, commanding, and sightly knolls? It is at bottom a question of economic ability, not of personal or racial tastes. The poorer immigrants and the poorer natives, also, with of course many exceptions, settled in the woods because they could not afford to encounter the risk of taking an ideal farm in the "Congress land" districts, nor could they afford to buy such land from speculators or from farmers. They took what was at hand, the heavily wooded lands avoided by persons who were in position to pick and choose. In many cases they might have found lands on the open prairies, which, as we saw, were taken later than the other lands even by Americans who had some means. But the person without means would have been helpless in such a situation. He would need money to buy lumber both for building and for fencing, while in the timber his personal labor supplied these essentials, without cost, in the process which at the same time cleared his land. Besides, the timbered areas near Milwaukee had the advantage of a good market not only for the agricultural products to be raised after the work of clearing was done, but even for some of the incidental products of clearing, like cord-wood, pot and pearl ashes, charcoal, and later, railway ties. Where the timber was largely or partly merchantable pine or cedar, as in the counties north of Milwaukee along the lake, the sawmills and shingle mills furnished a market. Thus the settler on a woods claim, if physically equal to the labor involved, might hope to supply his family with

[36] J. Schafer, *Four Wisconsin Counties, Prairie and Forest* (Wisconsin Domesday Book, General Studies, Vol. 2, State Historical Society of Wisconsin, Madison, 1927), pp. v–vi.

necessities at least from the forest products of his farm, while extending, year by year, his cultivated area.[37]

Having described the dairy industry of Wisconsin in the days when butter-making was a household industry and the market for butter was the country store, Schafer described the forces that brought about the change in the 30 years from 1860 to 1890:

The forces which operated to bring about the great and fundamental changes so easily recognizable were mainly four: the influence of the New York example; the leadership of New York men; the scientizing and organizing agency of the College of Agriculture; and the whole-hearted cooperation in the practical execution of plans and policies of Swiss, German, Scandinavian, and other farmers of foreign extraction to whom, more than to the native American element, the leaders learned to look for the daily exemplification of good methods and the elimination of bad practises.

. . . The New Yorkers who came to Wisconsin in such large numbers from 1837 to 1850 knew something about the beginnings of a more scientific — at least a more business-like — system of dairying; while others, like the late ex-Governor Hoard, who came in the fifties, had had personal contact with a movement for improved agriculture under the dairying impulse which was similar in many respects to what we have seen in this state under such leadership as that of Mr. Hoard. The reports of the New York Board of Agriculture, the columns of the agricultural press, especially the *Rural New Yorker,* the lectures of scientific agriculturists, all described with enthusiasm the doings of dairymen in Herkimer, Oneida, Cayuga, Ontario, and other central New York counties. Their herds, chiefly Durhams and Devons, were held up as examples of good breeding, their barns and dairy houses were pictured for the instruction of farmers elsewhere, their methods of manufacture carefully set forth.

Except to those who are unaware that people from the Empire State were so dominant in Wisconsin, there is no mystery in the fact that it was most frequently New York men who headed local movements for the building of cheese factories, for organizing breeders' associations and other means calculated to develop the dairying interests. . . .

When W. D. Hoard in 1870 began publishing the *Jefferson County Union*[38] at Lake Mills, there were possibly not more than 45 or 50 cheese factories in Wisconsin. Having come in 1857 from Madison County, New York, and being in close touch with New York conditions, he was interested in promoting dairying in Jefferson County in accordance with Madison County examples. From news items about dairying progress he passed to editorial comment, and very soon his dairy column contained the most analytical, trenchant, and enlightening discussion of dairy problems. . . .

Hoard saw that the fundamental problem confronting Wisconsin farmers was the problem of marketing dairy products, especially cheese. Western markets, by 1872, were becoming glutted and it was necessary for Wisconsin manufacturers to break through into the eastern and English markets. This feat, no light one in the days when Wisconsin dairymen were without influence and New York's competition was so overshadowing, was accomplished through the agency of the Wisconsin Dairymen's Association, organized in February, 1872, primarily for that purpose. The first activity of the Association was to establish market days at Watertown, where Wisconsin manufac-

[37] J. Schafer, *A History of Agriculture in Wisconsin* (Wisconsin Domesday Book, General Studies, Vol. 1, State Historical Society of Wisconsin, Madison, 1922), pp. 38–39.

[38] *Hoard's Dairyman* began as a "weekly edition in the *Jefferson County Union.*" Hoard moved it to Fort Atkinson in 1873.

turers could meet eastern commission men and learn what the market demanded in the way of quality, uniformity, and mode of packing the product.[39]

These essays by Hibbard, Thompson and Schafer, on the history of Wisconsin, present a picture of the forces and conditions — economic, social, physical, biological and psychological — which determined the development of the succession of types of farming. They provide the student with the background in terms of which to understand the forces which bring about changes. Such an understanding is a fairly sure cure for the static economic thinking so characteristic of students who study only the present situation without a knowledge of economic history.

JOHN LEE COULTER — AGRICULTURE IN MINNESOTA AND NORTH DAKOTA

John Lee Coulter also presented a thesis on agricultural history to the faculty of the University of Wisconsin.[40] Coulter's monograph dealt with the development of agriculture in northwestern Minnesota and northeastern North Dakota. Coulter was born and raised in that area and had acquired a background in terms of which to interpret the facts which he gathered from many sources. Coulter stated that:

> A study of the economic problems which have appeared and how the farmers have met and solved these problems is the principal task of this paper. . . .
>
> The more important part of the material used has been gradually collected over a period of several years during which time the author has acted as census enumerator in parts of the valley, agent and expert for a machine company and finally as a student conducting an investigation in order better to complete this monograph. Many of the pioneer farmers are yet engaged in their chosen business; these have told freely of their experiences and of their problems and solutions. Farmers, and business men generally, have been consulted with great success.[41]

The monograph dealt briefly with geology, physiography and soils, climate and precipitation, gave an outline of the rise of the fur industry and the development of the big fur companies, then told the story of the coming of the railroads, the sale of railroad lands in blocks of eight and ten sections which gave rise to bonanza wheat farming. The panic of 1873, the consequent setback of the Northern Pacific Railroad, the stopping of railroad construction,[42] and the grasshopper ravages, combined to give the valley a reputation of being worthless land. J. B. Power, Land Commissioner for the Northern Pacific "was on the ground, knew what the land was good for, was thoroughly acquainted with the northwestern movement of

[39] Schafer, *Agriculture in Wisconsin*, pp. 154–57.

[40] J. L. Coulter, "Industrial History of the Valley of the Red River of the North," State Historical Society of North Dakota, *Collections*, 3:529–672 (Bismarck, 1910). (Ph. D. Thesis, University of Wisconsin, Madison, 1908.) This was one of the monographs stimulated by the Division of Agriculture and Forestry of the Carnegie Institution of Washington. See Carnegie Institution of Washington, *Yearbook*, 11:78 (Washington, 1912).

[41] Coulter, "Red River of the North," pp. 529–30.

[42] Coulter, "Red River of the North," p. 583.

the wheat producing areas, and had just started to sell a few parcels of land when the financial crash came. The crash put an end to all activity in that business for at least a year. The objections to the country were now magnified manifold by losers and the advantages were minimized in the same proportion."[43]

Power was now unable to get new settlers interested in small farms but "succeeded in planting the seed which in a few years sent wild stories of 'bonanza farms,' around the world."[43]

Coulter continued:

By 1880 there were 82 farms in the valley which were more than 1,000 acres in area, of these a large number contained from four to six sections of land. . . .

. . . It has been noted that prior to 1875 a diversified agriculture was practiced; the transition to a one-crop system of farming was now rapid. By 1879 the production of wheat in the valley counties was 2,716,558 bushels. . . .

The sudden, almost revolutionary, increase in production of wheat was only accomplished by a complete readjustment of the farming system. The farmers now bought more land, purchased equipment and hired great numbers of laborers by the day, month or season. They neglected many minor crops as well as the live-stock industry, and the vegetable garden, each man was enabled to accomplish much more than formerly by improved machines and farm methods. These were the three most significant changes in the system which now converted hundreds of farms into wheat producing factories. . . .

. . . what made this new order of things possible, indeed, what forced this new system into existence? (1) Cheap land is a primary force and the general government had reached the most liberal period in her land policy at this time. The peculiar financial straits in which the railroad companies found themselves placed their lands before the public on much the same footing. (2) The composition of the soil, the topography, the precipitation, the climate, indeed the factors recounted in chapters two and three of this study were advantages which little of the then free lands could offer. (3) Advertising was a special force. The district lent itself readily to being boomed as the "Nile Valley of the American Continent," "The Land of No. 1 Hard Wheat," etc. Railroad Companies and Bonanza farms placed it in the limelight. (4) Large amounts of eastern money seeking investment resulted in the establishment of excellent transportation facilities; these now pushed ahead of settlement — led the way. (5) A very great demand for American flour, especially for the new "Patent" flour made from the No. 1 Hard spring wheat resulted in an extraordinary high price for the wheat — especially when we consider the new, cheap methods of production. (6) A great flood of immigrants from the agricultural districts of highly civilized northern countries were looking for opportunities to establish homes in this country; they were ambitious to become farmers — landowners — and hence were attracted to this region. (7) A large number of young people from other northern states of the Union were moved by like motives and cast their lot in this new district. The wheat industry was suffering in older districts and many old wheat growers sought greener fields. (8) A pre-requisite of

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[43] Coulter, "Red River of the North," pp. 569, 570.

success, a large supply of labor available for the period when wanted and who vanished with the end of the working season and therefore were not an expense during the dull seasons of the year, was forthcoming from lumber camps, etc. Thus a very cheap labor supply was accessible; wages were comparatively high while the men were actually at work, but that was for only a few long days. (9) The increasing price of land farther east, and the comparatively low freight rates made the older wheat growing districts practically non-competitors, or set a marginal cost of production at such a high point that the profit in the Red River valley was exceptionally great. (10) The fact that the soil in the older districts was depreciating when compared with the new and fertile fields of the Red River valley was generally noted as a potent force. (11) A chance element also entered here; after 1875 the grasshoppers left the district and no new enemy to cereal production took their place. . . . (12) The opportune perfection or invention of all the various time-saving machinery and other equipment necessary to successfully carry on this branch of the agricultural industry just at the time that the area under consideration was reached by the advancing frontier was a force, the value of which cannot be easily estimated. Fifty years of experiment, invention and improvement, together with rapid westward strides, brought us to the Red River valley with modern labor-saving machinery with which to take advantage of the opportunity.[44]

Coulter's story of the rise of wheat production in the spring wheat region of the Northwest gives concrete facts in terms of which to interpret the low prices of wheat in the United States in the 1880's and the 1890's.

ROBERT PRESTON BROOKS — AGRICULTURE IN GEORGIA

Among the graduate students at the University of Wisconsin interested in studying changes in agricultural organization was Robert Preston Brooks, who wrote his thesis on "The Agrarian Revolution in Georgia, 1865–1912."[45]

Chapters I, II, and III trace the changes in agricultural organization; chapter IV describes the workings of the two principal forms of tenancy that took the place of the plantation-gang system, and the remainder of the study is devoted to an account of present-day labor conditions in Georgia. The state embraces several areas differing widely in physiography and soils, economic history, and character of population. Each of the five divisions is here treated as a distinct unit, making possible interesting contrasts between those parts of Georgia where whites predominate, and those in which Negroes outnumber whites.[46]

The central feature of the monograph is the problem of establishing effective relations between freedmen and whites. The freeing of the slaves made some new arrangement necessary. What should the new system be? Obviously it was to be composed of the old elements,

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[44] Coulter, "Red River of the North," pp. 580, 588–89, 594–96.

[45] R. P. Brooks, "The Agrarian Revolution in Georgia, 1865–1912," University of Wisconsin, *Bulletin* 639, History Series, 3(3):393–524 (Madison, 1914). (Ph. D. Thesis, University of Wisconsin, Madison [1912].) This was one of the monographs stimulated by the Division of Agriculture and Forestry of the Carnegie Institution of Washington. See Carnegie Institution of Washington, *Yearbook*, 11:78 (Washington, 1912).

[46] Brooks, "Agrarian Revolution," p. 399.

human and material, both of which had deteriorated during the war of 1861–1865.

On many plantations operations went ahead with scarcely any interruption.[47] Planters called informal meetings of the freedmen, explained in simple terms their new condition and offered employment at the current rate of wages to all who desired to remain. After wandering off a short distance simply to assert their freedom, many Negroes returned to the familiar surroundings and took up their former labor. . . .

On the other hand, there was a large element of the freedmen who did not follow the course just outlined. The wide-spread belief that the plantations of their former owners would be divided among the ex-slaves at Christmas, 1865, acted as a deterrent to steady industry. . . .

. . . Agricultural operations almost ceased in some sections. . . .

. . . the policy of the congressional radicals fostered and encouraged political rather than industrial activity on the part of the blacks, and thus tended to prevent a speedy and satisfactory readjustment of the labor situation. . . .

The ante-bellum "plantation" implied large-scale production of a staple crop by forced labor. The success of the system as a productive enterprise lay in the ability of the plantation manager to organize and direct the labor of slaves, over whose movements he had complete control.

The problem confronting the planter in 1865 was to preserve the maximum degree of control over the laborers consonant with their changed condition. The best chance of securing this control seemed to lie in maintaining in most of its essentials the plantation organization. Of what use was the brawn of the masses of freedmen, utterly ignorant and penniless, if dissociated from the intelligence and skill of their former owners? Let everything proceed as formerly, the contractual relation being substituted for that of master and slave, wages taking the form of money payments instead of consumer's goods, and the laborer's freedom of movement being recognized. With such ideas as these the planters began life anew in 1865. There was no thought of abandoning the direction of labor; all the experience of Georgia cotton producers had taught them that Negro laborers would work regularly and efficiently only under the supervision and control of employer or overseer. The plantation was the established form of organization and it was natural that the planters should try to perpetuate it. In 1865, therefore, in a great number of cases all the externals of the former regime were continued: the Negroes lived in "quarters," went to the fields at tap of farm bell, worked in gangs under direction, and were rationed from the plantation smokehouse, the charge for food being deducted from the wage. A money wage was usually paid in 1865 and 1866, payment being weekly, monthly, or yearly, according to contract.

. . . The result of the operations of 1865 was a bitter disappointment. In spite of the abnormal price of the staple, heavy losses were sustained. The leading southern agricultural journal of the time was *The Southern Cultivator,* published at Athens, Georgia. The issues from 1865 to 1870 are full of letters, communicated articles, and editorials bearing on agricultural conditions.

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[47] F. B. Leigh, *Ten Years on a Georgia Plantation Since the War* (London: Richard Bentley and Son, 1883), pp. 14, 21. "The Negroes seem perfectly happy at getting back to the old place and having us there, and I have been deeply touched by many instances of devotion on their part." *Southern Cultivator,* 24:88 (April 1866), quotes *Macon* (Ga.) *Telegraph*: "As a general rule, the freedmen, notwithstanding the absurd reports calculated to deter them from entering into agreements, have gone to work with alacrity to earn a livelihood for themselves and families."

As early as the issue of July, 1865, the wages-plantation system came under fire. It was impossible to get cash to pay wages, for money was simply nonexistent in Georgia.[48] The wages fixed by the Freedmen's Bureau were unreasonably high. [*Footnote omitted.*] The labor was worthless in the absence of power to compel attention to duty. The Negro saw no reason why he should not stop work to go fishing; he was willing to sacrifice his wages and was unconcerned about the state of the crop. . . .[49]

After the experience of 1865, the editor of the *Cultivator* suggested the substitution of the share system, hoping that the planters might in this way enlist the self-interest of the Negroes in the farming and thus check their roving proclivities. There was no suggestion that this change would in any way impair the owner's control over the labor. Thus, while advocating the share arrangement, the editor said:[50] "There is little hope that this or any other plan will succeed, under any other oversight than the planter's own eye."[51]

Brooks gave in interesting detail the struggle of the planters to find a way of securing a profit from their land by utilizing the labor of freedmen. The wage system having proved unsatisfactory, as a rule, a share system (the cropper system) was introduced. That system enlisted more interest on the part of the worker because he had to remain until the cotton was harvested in order to get the returns for his labor, although he had received advances which often amounted to a large share of the value of his crop. In addition to the cropper system, the tenant system was introduced where the landlord received a fixed rent in cash or cotton, gave a lien on his crop to a storekeeper for supplies, and operated rather independently, often, however, with the eye of the storekeeper watching to make sure the tenant was not drawing supplies beyond that warranted by his diligence and success in producing a cotton crop.

Having described the evolution and character of the cropper and the tenant system in general terms, Brooks devoted 45 pages to the economic history and land tenure movements in the mountain counties, the upper Piedmont, the Black Belt, the wiregrass country and the coast counties. Brooks was in a position to describe the situation in those areas on the basis of information he had gathered "as Expert Special Agent for the Agricultural Division of the Bureau of the Census, in a study of plantation conditions"[52] in the summer of 1911.

All the important farming counties of Georgia were visited and systematically studied. Inquiries were made as to the prevalence of the plantation type of organization, the growth and status of small ownership, the several classes of tenancy, and the financial, social and moral conditions of the

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[48] See article entitled "Labor Regulations," signed by W. in the *Southern Cultivator*, 23(7):100–02 (July 1865).
[49] *Ibid.*, p. 180, (December 1865).
[50] *Ibid.*, p. 181.
[51] Brooks, "Agrarian Revolution," pp. 404–05, 407, 410–13.
[52] Brooks, "Agrarian Revolution," p. 507.

tenants. . . . Information was obtained from planters, merchants, tenants, and laborers.[53]

The regional studies give the monograph geographical as well as historical value as an approach to the study of the economics of agriculture in Georgia. Obviously the tenure aspects of the monograph are so dominant as to make it first of all a study in land economics, although the farm management and credit aspects are important. L. C. Gray was working on his study of southern agriculture[54] at the time Brooks was at Wisconsin. These men were often together and, while two decades passed before Gray's two volumes were in the press, there is a kinship of the products due to their association, as well as to the fact that both pieces of work were initiated as doctoral dissertations at Wisconsin.

Carnegie Funds Help

A new impulse was given to the study of agricultural history at the University of Wisconsin when H. C. Taylor was asked to participate in a project initiated by the Department of Economics and Sociology of the Carnegie Institution of Washington.[55] The project was designed to stimulate the writing of American economic history, and agricultural history was given a prominent place in the plans under the leadership of K. L. Butterfield. To provide one phase of the agricultural history work as outlined, Butterfield, in 1906, asked Taylor to write the history of land tenure and Hibbard (then of Iowa, later of Wisconsin) to write the history of "Federal and State land policies as influential in economic development." Taylor collected materials from a variety of sources including the census and the agricultural press. Several monographs on tenure were written under his direction. He, himself, in 1908, prepared a manuscript entitled "The Tenures of Farm Lands in Wisconsin,"[56] which furnished the background material for his bulletin on the same subject.[57]

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[53] Brooks, "Agrarian Revolution," p. 507.

[54] See pp. 310–13.

[55] See Carnegie Institution of Washington, D. C., *Yearbooks,* Nos. 3–16 (1904–1917), for reports of its Department of Economics and Sociology. These reports show authors and subjects of agricultural history monographs published, prepared, or assigned. The title of the project "as agreed upon by the collaborators, and as approved by the Executive Committee, is 'Contributions to American economic history.' It is believed that this is a truer and more adequate title than that which has been used, 'Economic history of the United States;' for the purpose is not so much to write a literary economic history as to furnish the materials in general chronological and logical order for such a history. This was the intention from the first, but the adoption of a satisfactory title has been recent." The Department of Economics and Sociology of the Carnegie Institution of Washington, D. C., was authorized in 1904 (*Yearbook,* 1904:55) and discontinued in 1916 (*Yearbook,* 1917:14). Carroll D. Wright was Director from 1904 to Feb. 20, 1909; Henry W. Farnam was Chairman from 1909 to 1916. The Division of Agriculture and Forestry, in charge of Kenyon L. Butterfield, President of Massachusetts Agricultural College, was one of several sections of the Department of Economics and Sociology.

After 1916, those who had been collaborating in the work of the Department of Economics and Sociology of the Carnegie Institution of Washington were reorganized as the Board of Research Associates in American Economic History with Henry W. Farnam chairman. In the new setup H. C. Taylor was asked to take charge of the history of agriculture in place of K. L. Butterfield, who asked to be relieved because of the pressure of other duties.

[56] Manuscript in the H. C. Taylor Archives.

[57] H. C. Taylor, "Methods of Renting Farm Lands in Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 198 (Madison, 1910).

Hibbard was assisted by a number of other scholars[58] in the study of state land policies. However, federal policy history constituted the more extensive part of Hibbard's work for the project.[59] The project work on tenure and land policy will be discussed in the chapter on land economics.

Another Carnegie assignment to H. C. Taylor was the development of a history of the progress of agricultural production in the United States from 1840 (the date of the first census of agriculture) to 1860. Several persons participated in this study over a period of years. Taylor projected a plan in which the facts of agricultural production as presented in the census reports should constitute the framework of the story. After lengthy experimentation, he decided to make a series of maps which would show the location and extent of each crop and each variety of livestock for each census date. Taylor had noted in a small book on grasses by W. J. Spillman[60] a simple dot map method of designating areas where certain grasses were important. Some of the dot maps indicated distribution only while others, based upon census data, represented both distribution and density by making each dot represent a given range of acres. Taylor decided to use the latter form of the map to display the census data on farm crops and livestock, decade after decade. This gave the observer an immediate impression of the location and relative importance of each line of production for each census date. By comparing maps for a series of decades, the mind readily grasped the changes which had been taking place, whether of expansion or contraction.

The wheat and the sheep maps thrilled Taylor, particularly as he saw them take form. Those maps showed not only the expansion but the shifts. With the westward expansion of agriculture, sheep and wheat were in the vanguard. With the increase of these enterprises in the West, there was a decline in many of the older regions. For example, in Vermont, which had been a dense area of sheep production in 1840, sheep practically disappeared and cows took their place. The sheep maps were published by the University of Wisconsin in 1911.[61]

Dot maps were also used for studying types of farming in a given region. By placing all the crop and livestock maps of a given date side by side, it is possible to see at a glance the way in which those enterprises are combined into a system of farming in certain regions, whereas single cropping systems dominate in other regions.

Having used the dot maps to study statistical facts of United

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[58] See Carnegie Institution of Washington, *Yearbook* No. 7, 1908 (Washington, 1909), pp. 75–76; *ibid.*, No. 8, 1909 (Washington, 1910), p. 72.

[59] B. H. Hibbard, *A History of the Public Land Policies* (New York: The Macmillan Company, 1924).

[60] W. J. Spillman, *Farm Grasses of the United States* (New York: Orange Judd Company, 1905). (Contains 13 dot maps.)

[61] H. C. Taylor, "The Place of Economics in Agricultural Education and Research," Wisconsin University *Research Bulletin* 16 (Madison, 1911).

States agriculture through the changes of a series of decades, the next step was to clothe that skeletonized series of facts with the descriptive material found in contemporary books and magazines. That was a far less mechanical undertaking. Taylor read his way through the *Cultivator* and *Country Gentleman* for the years 1840–1865, excerpting, item by item, the statements that threw light upon the history of every phase of farming and the westward expansion of northern agriculture. The task was a large one, but with the development of the teaching and research work in agricultural economics under his supervision, Taylor commenced to draw in student assistants who in time took over the major part of the work. A. E. Cance, J. L. Coulter, L. C. Gray, O. E. Baker, J. I. Falconer, and O. C. Stine were among the graduate students who took part in the undertaking.

FALCONER AND BIDWELL — NORTHERN AGRICULTURE

J. I. Falconer[62] took the available materials collected by Taylor and the various assistants,[63] added to them, and wrote a history of northern agriculture from 1840 to 1860. In order to cover the history of northern agriculture over the years 1620 to 1840, the Board of Research Associates in American Economic History[64] employed Percy W. Bidwell, of Yale University, as a collaborator in the Bureau of Agricultural Economics[65] on the history of northern agriculture prior to 1840. Bidwell was selected because of the excellent work he had done on the history of New England agriculture and rural life.[66] He had demonstrated that he could portray the economic conditions and forces which induce farmers to change their types of farming and modes of living. The facts of change were wanted, but not as mere facts. The interpretation of the facts of change in terms of the economic forces which impelled change were wanted along with the binding force of custom which retard change. The writings of Bidwell and Falconer were published together.[67]

Bidwell sketched the agriculture of early settlers and described the rural economy of the eighteenth century, including agricultural production and such agricultural marketing as existed at that time. He pointed out that the agriculture of the seventeenth and eighteenth centuries was largely of a self-sufficing character — production was

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[62] His Ph. D. Thesis (University of Wisconsin, Madison, 1914) was entitled "Agricultural Production in the United States From 1840 to 1860."

[63] J. L. Coulter, A. E. Cance, O. E. Baker, O. C. Stine, J. I. Falconer, L. C. Gray.

[64] See footnote 55, p. 302.

[65] Bidwell's appointment as collaborator dated from Aug. 5, 1921, to June 30, 1924. (From U.S.D.A., personnel records.)

[66] P. W. Bidwell, "Rural Economy in New England at the Beginning of the Nineteenth Century," Connecticut Academy of Arts and Sciences, *Transactions*, April 1916 (New Haven, 1916), 20:241–399; P. W. Bidwell, "The Agricultural Revolution in New England," *American Historical Review*, 26:683–702 (July 1921). Also reprinted. This paper was read at the Washington meeting of the American Historical Association, December 29, 1920.

[67] P. W. Bidwell and J. I. Falconer, *History of Agriculture in the Northern United States, 1620–1860* (Washington: Carnegie Institution of Washington, 1925). Part I, entitled "Agriculture in the Earliest Settlements," Part II, entitled "Rural Economy in the Eighteenth Century," and Part III, entitled "Expansion and Progress, 1800–1840," were written by Bidwell. Part IV, entitled "Period of Transformation, 1840–1860," was written by Falconer.

primarily for home use — and that the self-sufficing economy had to do not only with the food supply but with clothing and shelter. For the period from 1800 to 1840, Bidwell drew a pen picture of the agriculture and noted the causes and problems involved in the transition from a self-sufficing economy to commercial agriculture. His work is based on a large volume of source material and is fully documented. His voluminous footnotes are omitted from the following excerpts and notations which give in brief form a general idea of the ever-expanding and ever-changing agriculture of the period.

Two economic characteristics stand out prominently in colonial agriculture: (1) its extensive character, that is, the thinness of the application of labor and capital on a large extent of land, and (2) its self-sufficiency, meaning by that term not complete isolation from commercial relations, but production, as a rule, for home consumption rather than for sale.[68]

Self-sufficiency was a striking and important characteristic of the colonial farm. The farm family produced for themselves food, clothing, house furnishings, farm implements, in fact practically everything they needed. . . .

In the matter of clothing the colonial farm was quite as self-sufficient as in diet. The age of homespun is a title very appropriately applied to this period to indicate the importance of the domestic textiles in rural economy. Throughout the eighteenth century it is the practically unanimous testimony of official and unofficial sources that the country people were clad in materials of their own "manufacture." . . .

In the construction and furnishing of their homes the inland farmers relied to a very limited extent on exchange with the world outside their immediate vicinity, and in fact supplied their wants, as in the matter of food and clothing, largely by the exertions of their own families. . . .

Besides taking his part in many of the harder tasks of the household industries, such as breaking, swingling, and hatcheling flax, the farmer applied himself more or less regularly to a diversity of other tasks according to his especial "bent" and opportunities. On the sea-coast, he was frequently a sailor or a fisherman for part of the year. In inland towns he often plied some trade or other and was classed as an artisan as well as a farmer. Every farmer did a multitude of odd jobs for himself, such as repairing old buildings, and building new, laying walls and stoning up wells, butchering pigs and cattle, making axe-handles and brooms, splitting staves and shingles, tanning leather, and cobbling shoes. Occasionally he performed some of these tasks for a neighbor, who either had not the requisite skill or was too busy with strictly agricultural operations. Such service was more often repaid in kind than in currency.

Thus the Yankee farmer acquired his proverbial reputation for ingenuity and for a moderate ability in a variety of occupations. . . .

. . . the lack of a market was an insuperable obstacle to specialization, and consequently the family group was forced to rely upon itself and upon irregular exchange with other neighboring groups for the necessaries of existence, and to do without, in large measure, the comforts and luxuries.[69]

The trade of Philadelphia, New York, and Boston with the "back country" was described. Water transportation and teaming were the forms of transportation. The following quotation[70] gives a picture of the town of Catskill about the close of the eighteenth century.

[68] Bidwell and Falconer, *History of Agriculture*, p. 115.
[69] Bidwell and Falconer, *History of Agriculture*, pp. 126–27, 129–31.
[70] Bidwell and Falconer, *History of Agriculture*, p. 140.

The town of Catskill on the Hudson had prospered greatly after the Revolution through the rapid development of its trade by wagonroad with the back country of the Hudson Valley and of western Connecticut.

"Six hundred and twenty-four bushels of wheat were brought to the Catskill market in 1792. Forty-six thousand one hundred and sixty-four bushels came in 1800. On a single day in 1801 the merchants bought four thousand one hundred and eight bushels of wheat, and the same day eight hundred loaded sleighs came into the village by the western road."

A historian of the town wrote in 1803: "Between fifteen and sixteen hundred sleighs, containing chiefly wheat and potash, have been unloaded in the village in one day." At this time there were 15 sloops owned in the town, 12 of which were engaged in carrying produce to New York, 2 to Boston, and 1 to the Southern States.

In describing pioneering west of the Alleghenies, Bidwell presented population maps that were prepared in the U. S. Department of Agriculture for 1790, 1810, 1830, and 1840. He discussed the public land system, the forms of credit, and the physical features that retarded or facilitated the settlement of the new land.[71] Capital goods and labor were scarce, land was plentiful, hence farming was "extensive."

Every settler had a few cattle, enough to furnish milk and butter for his family and a yoke or two of steers for the farm work. These with a few sheep of mongrel breeds, a large herd of wild swine, and fowls, geese, and ducks constituted his livestock. . . .

A pioneer family required to begin with only 4 or 5 acres of cleared land. Half an acre was usually devoted to garden vegetables, another half-acre to wheat, and the remainder was the corn patch. . . .

The cheapening of transportation costs by the improvement of roads and by the building of canals was responsible for the beginning of a new era in western agriculture. Rivers were the natural means of communication, but roads were necessary to bring products of inland farms to the waterside. . . .

The opening of the Erie Canal in 1825 marked the beginning of a new era in western trade. . . . In western New York wheat became the chief crop and the Genesee Country became our chief wheat-growing section.[72]

Other topics discussed by Bidwell for the period from 1800 to 1840 were the organization and education of farmers, foreign trade and the home market, farm labor and labor-saving machinery, livestock improvements and specialization, crops and tillage, and the transition from self-sufficient economy to commercial agriculture.

The development of wool-growing on a commercial basis was a spectacular incident of eastern agriculture in this period, directly resulting from the growth of a home market. . . .

Between 1800 and 1815, a noteworthy effort was made to improve the native stock by the importation of rams and ewes from Spain. . . .

In 1830 began the period of greatest prosperity in Eastern wool growing.

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[71] Bidwell and Falconer, *History of Agriculture,* pp. 147–61.
[72] Bidwell and Falconer, *History of Agriculture,* pp. 166–68, 180–81.

Woolen manufacturing was at last firmly established and, encouraged by tariff protection, increased its output and demand for raw material. . . .

. . . A few English cattle were brought to this country before 1800 . . . but the period of greatest activity dates from about 1820. Between that date and 1840, representatives of all the important English breeds had been introduced, including Herefords, North Devons, Alderneys, and Guernseys and, most important of all, the Improved Durhams or Shorthorns. . . .

Connecticut Valley cattle were occasionally marketed in New York, but most of them were driven to the historic Brighton market just outside of Boston. In this town a weekly cattle fair had been held since Revolutionary days. Farmers, drovers, butchers and commission men met there on Mondays to buy and sell. . . .

Beginning in 1830, market reports were issued weekly, giving the number of animals of various kinds sold and notes on the average prices prevailing. The reports appeared Tuesday morning in the Boston papers and were widely copied in journals having a circulation throughout the state. . . .

In southeastern Pennsylvania, especially in Chester County, cattle were fattened for the Philadelphia and New York markets. As early as 1819 the business was so prosperous that grazing farms in the neighborhood of Philadelphia were selling at from $100 to $300 per acre. The stock came from many sources, from Maryland, Virginia and South Carolina; from Ohio, and from northern and western New York. . . .

The readjustments in eastern farming caused by the rise of manufactures are clearly evident in the regional distribution of dairy products. In the neighborhood of the larger cities the sale of milk had largely supplanted the making of cheese, and of butter as well, except for small amounts of the fresh article for immediate sale. A great many farms within a distance of 12 to 14 miles of Boston were selling milk daily to the city. The larger producers, those with 40 or more cows, evidently did their own peddling; the smaller farmers, keeping 4 or 5 cows, sold their milk to dealers. . . .

In no class of domestic animal was such striking improvement effected as in swine. . . .

Western competition from western New York and Ohio in swine and salt pork was more seriously felt by Eastern farmers than in any other kind of livestock. Worcester County, Massachusetts, which about 1830 was sending out 2,000,000 pounds of pork to Boston, in 1836 was buying western pork from Boston. In 1840 the swine sold at Brighton came principally from New York State. In the Mohawk Valley as early as 1828 farmers were complaining that they could no longer advantageously make pork for the Albany and New York markets. "The farmers to the West, where Indian corn is cheap, can now, assisted by the canal, afford to undersell us. . . ."

PROGRESS RETARDED

The transition from self-sufficient economy to commercial agriculture was not easily accomplished. The powerful forces of habit and tradition tended to keep the farmers in the old ways of producing what they needed for their own use, selling little and, as a matter of pride as well as of necessity, buying next to nothing. . . .

The lack of working capital was a serious hindrance to improvement and to the development of agriculture as a business. . . . Consequently, when it came to purchasing the new labor-saving farm machinery, or new varieties of seeds or improved livestock, funds were lacking. . . .

. . .The farmers were hampered by their inexperience in business affairs, by their lack of capital, by imperfect credit and marketing facilities, and by

the persistence of the habits and traditions of the self-sufficient economy. The rule that the farm should supply all that the farm consumed had acquired the validity of an article of religious faith. To buy from outside goods which might be produced at home was held to be not only bad economy but also doubtful morality. When production for sale had finally begun there arose the perplexing question what to produce. The eastern farmer discovered he had no monopoly of the home market. Cheaper transportation introduced western competition, causing unstable markets. Wheat, pork, wool, hops, butter, and cheese all came more cheaply from the West, forcing the easterners to make rapid readjustments.

The farmer did not have to fight his battle alone. The agricultural societies and the farm papers came to his aid with encouragement and advice. They exhorted him to use manures more liberally, to sow clover, and to plant roots, to take better care of his livestock, and to pay more attention to breeding. They called to his notice the new labor-saving machinery and stimulated interest in new varieties of grain and in improved types of sheep, swine, and cattle. . . . In matters of farm economics sound leadership was lacking. Both the publications of the agricultural societies and the farm papers contained fallacious arguments against leaving the beaten paths of the self-sufficient economy. . . .

It was the principle of self-sufficiency applied to the whole region rather than to the single home which explains the absurd attempts to promote wheat cultivation in New England by State bounties.[73]

The period prior to 1840 has claimed considerable space because it was the transition from self-sufficing to commercial economy which stimulated thinking in terms of agricultural economics and the initiation of crop estimates as a guide in agricultural production and marketing.

While the self-sufficing economy and the beginnings of commercial agriculture characterized the agriculture of the United States prior to 1840, the central theme of the chapters on northern agriculture from 1840 to 1860 was expansion. Of course the westward movement of population and the introduction of farm equipment, which enabled each farmer to operate more of the new rich land than was possible by old methods, were integral parts of that expansion.

The total population living west of Ohio [in 1840] was only slightly greater than the population of that State. The population of Ohio was only three-fifths that of New York State. The total area of improved land in farms in the territory of Indiana, Illinois, Michigan, Wisconsin, Iowa, and Minnesota was only slightly greater than that of New York State alone. While the agriculture of the East was undergoing a change in character, the West was entering upon a period of rapid expansion of the area of land in use. In 1840, the chief region of production in the West extended along the Ohio and Illinois Rivers, northward along the Mississippi and westward along the lower course of the Missouri River. The open prairie to the north was as yet hardly entered, for settlement had held close to the woods and

[73] Bidwell and Falconer, *History of Agriculture*, pp. 217, 221–23, 225–27, 229–31.

rivers. The early settlements along the Ohio and lower Missouri and the Mississippi Rivers had benefited by cheap transportation to southern markets. Southern Michigan, at the western end of Lake Erie, was now attracting settlers. Railroads had not as yet been built. . . .

. . . Extensive farming, soil exploitation and the development of farm machinery were outstanding characteristics of American agriculture. The westward expansion of settlement and agricultural production was a dominant feature of the period.

The preemption act of September 4, 1841, was the most important legislation of the period affecting the disposal of the public lands of the West. Heretofore land had been sold at public auction; the act of 1841, however, allowed actual settlers to buy their land at private sale at the minimum price of $1.25 per acre. This method of sale prevailed throughout the period and until the passage of the homestead act of 1861. Tracts as small as 80 acres could be purchased. After 1850, railroad lands were also placed in the market. The emigrant to the West could now select and buy his farm as soon as he arrived.[74]

The agricultural situation in the North Central States in 1840 and the developments which were in progress prior to 1861 need to be kept in mind if one would understand the way in which the expansion of the railroad network, flow of population, and utilization of the open lands of this area created the agricultural situation of the 1890's. The Bidwell and Falconer text which related the story of the beginnings of the expansion of commercial agriculture is enriched by the insertion of maps showing the extension of barge canals and railroads between 1840 and 1860 and by dot maps showing the growth of population, the westward expansion of the areas of wheat, corn, and oats, and the numbers of cattle, sheep, and swine.

The movement of the people to rich farm lands of the West, and the trekking of great flocks of sheep to free grazing lands beyond the areas in farms, were indicative of the presence of a powerful economic force at work changing the face of North America. One of the most significant aspects of the whole development centered about the invention of new equipment with which to cultivate the land and harvest the crops. The text is illuminated by cuts, copied from agricultural papers of that period, of plows, harrows, seed drills, corn planters, cultivators, mowers, reapers, and threshing machines representing various stages in their evolution. Forces which made for change were operating in the East as well as in the West. This is brought out briefly in the following summarizing statement:

The prominent feature in the history of northern agriculture from 1840 to 1860 was its dynamic nature. It was a period of expansion and reorganization. In the West, expansion was stimulated by the presence of prairie lands. The development of commercial agriculture in the prairies was stimulated by, and partly responsible for, the invention of farm machinery and the construction of railways to carry the surplus products of the farms to the eastern markets. In the East it was a period of reorganization, made necessary because of (1) the competition of the factories and of west-

[74] Bidwell and Falconer, *History of Agriculture,* pp. 263, 266.

ern farms for the rural population; (2) the competition from the western farmers in the production of agricultural staples such as wheat, wool, beef and pork; (3) the increased demand of the eastern cities for dairy products, garden truck, and hay, articles which, either because of their bulk or perishable character, were not shipped from the West in competition with the eastern farmer; and (4) the improvement in farm machinery and transportation.[75]

All of these facts presented one by one in the text need to be assembled and held in mind simultaneously if the student of agricultural economics would grasp the significance of the dynamic forces which were in action in the pre-Civil War days and which were greatly speeded up in the years following that war.

L. C. GRAY — SOUTHERN AGRICULTURE

L. C. Gray's assignment was the writing of the history of southern agriculture from colonial times until 1860. His thesis covered one segment.[76] Gray continued that piece of research for 25 years as a side line to his primary work as teacher or government worker. The final product is a monumental work in two large volumes.[77]

That history of southern agriculture prior to 1860, by Gray, presents a picture in striking contrast to the agriculture of the North. Commercial aspects were prominent from the beginning, although not without many elements of the self-sufficing economy. Plantations operated with slave labor and the production of staples for export were outstanding characteristics of agriculture in the South. Gray clarified and enlarged the picture by portraying in addition the other elements of southern agriculture which had not received adequate attention by historians. The student of southern agriculture can turn to Gray's history for the ante-bellum background material needed in appraising any current situation. That work was prepared under the general supervision of H. C. Taylor, as a member of the Board of Research Associates in American Economic History.[78] In that capacity Taylor prepared an introduction to Gray's volumes which is presented here to give a glimpse of that comprehensive work.

> While a graduate student in the University of Wisconsin, commencing in the autumn of 1908, L. C. Gray started the work which now [September, 1932] culminates in this comprehensive treatise. [By 1911] . . . enough of the material, especially that relating to the plantation, was written up to fulfill the requirement for a doctor's thesis [at the University of Wisconsin].

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[75] Bidwell and Falconer, *History of Agriculture,* p. 448.

[76] L. C. Gray, "The Genesis and Expansion of the Plantation System in the Southern States of North America During the Colonial Period." (Ph. D. Thesis, University of Wisconsin, Madison, 1911.)

[77] L. C. Gray, assisted by Esther K. Thompson, *History of Agriculture in the Southern United States to 1860* (Washington: Carnegie Institution of Washington, 1933).

[78] See footnote 55, p. 302.

With most students this would have ended the enterprise, but Doctor Gray stayed by the task of writing the history of plantation agriculture while teaching in the University of Wisconsin, the University of Saskatchewan, and the George Peabody College for Teachers. By 1919 the work was completed along the lines which Doctor Gray first had in mind. In the meantime, important works on the plantation appeared in print which paralleled in considerable degree the Gray manuscript. Instead of laying the manuscript away and forgetting it, new plans were made. The Research Associates in American Economic History, who had previously aided with small grants, cooperated with the result that the plan was reorganized and refinanced.

The new plan involved the history of the whole of Southern agriculture up to 1860 to correspond with the history of Northern agriculture then in preparation by Bidwell and Falconer. It also involved a fresh start and a comprehensive reworking of the source material, but since this was done in the light of the experience of the previous ten years in the same general field of research, it was far from being an entirely new project. During the past eight years Doctor Gray has had a competent assistant who has given full time to the work. He has devoted to the writing of this book in its present form all of his work time outside of office hours, and for a considerable period was on leave from the Government service to give full time to this undertaking. Few men there are who would have stuck to such a task through so many years.

The product is worthy of the effort. Doctor Gray has made a permanent contribution to economic history, agricultural economics, technical agriculture, and to the general social and political history of the South.

There will be a considerable number of people who will want to read this volume from beginning to end. Agricultural economists, directors of experiment stations, and the technical research men working in the South need the entire kaleidoscopic picture as a background for their thinking when dealing with present day problems. Other agricultural workers, as well as general economists and historians, will be interested in using this volume as a reference work. By consulting the table of contents and the index, they will find a richness of detail on innumerable subjects that have been passed over by other writers in general terms. These details give the basis for integrating a mental picture with the degree of accuracy essential to clear thinking. The colonists and the settlers of the Western expansion carried on significant agricultural and socio-economic experiments. They had to learn what to produce and how to produce, and how to use and conserve crops and livestock, or die in the undertaking. It was necessary to determine the characteristics of their physical environment — the properties of soil and climate — and how to adjust their agricultural practice to these conditions.

The modern experimenter takes agriculture as a going concern and experiments on ways and means of making improvements. Those things which our forefathers found worth while have come down to us as our system of farming. Those things which failed have been forgotten. Unless the modern experimenter is well versed in the history of the trial and error method of the colonists and early settlers, he may waste a large share of his time. Doctor Gray points to a number of instances where costly experiments were repeated because the historical records of their demonstrated futility were not available to the later experimenters as, for instance, the successive attempts to produce silk and wine. Changed economic conditions may, it is true, make farming enterprises profitable which were formerly unprofitable, but even these possibilities are reflected in the history of the experiments of the forefathers.

The experiments made by the pioneer farmers were economic as well as

physical and biological. In these days when the agriculture of the Old South is needing reconstruction, the experiences of earlier times may prove of importance in helping to avoid mistakes, if they do not point the way to the solution of present problems.

The student of the public relations of agriculture finds the colonial period in the South rich in examples of governmental control of agricultural production and marketing. As Doctor Gray points out, the plantation system was the earliest manifestation since classical times of a commercial and capitalistic agriculture. Consequently, Southern agriculture presents interesting early experiments in price fixing and in attempts both to restrict and to stimulate production in a period before the political economy of Adam Smith had come to dominate the thought of English speaking peoples. The production and exportation of indigo, flax, hemp, and other products were frequently encouraged by subsidies. The elaborate system of tobacco inspection developed in Virginia was one of the earliest instances of governmental standardization of farm products. Modern regulation of marketing probably falls considerably short of the intensity of regulation in the colonial period. . . .

The student of land settlement will find useful material throughout this volume. The book contains a detailed record of land settlement of the colonists along the coast and later of the pioneers who penetrated the Piedmont, the Great Valley, Kentucky, Tennessee, Missouri, and the Gulf States.

This volume furnishes much of the material which the student of political and social history must have in mind as a background for his thinking, if he is to interpret accurately the life and activities of that time. The South of the period covered by this volume was agricultural, with domestic industries playing an important rôle. The life of the planters and farmers was the life of the South. In comparing the life of the South with that of the agricultural North of that period, there has been a tendency to contrast the farm of the North with the plantation of the South. The plantation was a large-scale agricultural operation with an exportable staple bringing in large sums of cash income. The Northern farm was a small enterprise operating largely on a self-sufficing basis, with a cash income insignificant in proportion. The planter was a general manager and large capitalist who did little work with his own hands, and who often endeavored to live after the fashion of an English country gentleman in so far as economic success would permit. The Northern farmer was a working man. He . . . was more like . . . the English yeoman of the seventeenth century. This is an interesting contrast without disparaging either class, but it leaves one with an entirely wrong notion of Southern agriculture in the old regime. While staple agriculture and the plantation worked by large numbers of slaves were of outstanding importance, Doctor Gray has shown more conclusively and in greater detail than any preceding historian that life in the South was dependent upon subsistence crops and domestic industries to a very great extent, and that the great majority of the Southern people lived on small farms and worked with their own hands. Furthermore, it seems probable that most of the Southern white people were neither large planters nor poor whites but consisted of the substantial common stock who have provided the solid foundation of American society. The staple agriculture and the plantations stand out like a principal range of mountains which, however, occupies much less territory than the foothills that attract little attention. In this volume the small farms and the self-sufficing or nonstaple agriculture are given full con-

sideration and once the reader gets into the volume, he will be made to realize the possibility of overemphasizing the commercial and capitalistic elements in Southern economic history.

The history of slavery in its relation to agriculture has been worked out by Doctor Gray in the light of recent treatises on that subject as well as of the original sources. His broad economic training has enabled him to appraise the economic advantages and disadvantages of slavery more accurately than some of his contemporaries. He has provided a vivid description of plantation organization and a keen analysis of its strength and weakness. . . .

This volume also reveals in an interesting manner the large part which the immemorial conflict and distrust between farmers and merchants and between farmers and creditor classes played in the economic life of the South. Only in recent years have historians begun to reckon fully with these influences in interpreting the political currents of the colonial and early post colonial periods. The leaders who would improve the condition of the farmers of the South will find it worth while to study the history of this conflict as a starting point in understanding the psychology of the farmer of today, whose unconscious prejudices handicap cooperative and other movements intended to free him from the bad credit and bad merchandising conditions inherited from the past.

With these few pages of suggestion as to the ways in which this volume may be useful to students of agriculture and leaders of rural affairs, it is commended as a book to study as a whole or in part according to the interest or the need of the reader.[79]

Of that book Edwin F. Gay said: "L. C. Gray's history of southern agriculture is a very great piece of work."[80]

ULRICH B. PHILLIPS — PLANTATION ECONOMICS

Ulrich B. Phillips was a member of the department of history at the University of Wisconsin from 1902 to 1908. His primary interest was in the history of agriculture in the South, specifically in the economics of the plantation. He was using the historical approach and thinking clearly in terms of the working of economic forces in a changing world.

In January 1904 he gave to H. C. Taylor's class in agricultural economics at the University of Wisconsin three lectures on plantation economics along the lines laid down in an article he had published the previous year.[81] In 1905 Phillips published another article[82] in which he raised questions regarding the economics of slavery. The argument was to the effect that slave prices were speculative and too high, that slaveholding for this reason became an economic burden on the cotton planters. The parallelism between this burden resulting from the overcapitalization of slave labor and the burden from the

[79] Gray, *History of Agriculture in the Southern United States* . . ., pp. v–viii. Introduction by H. C. Taylor.

[80] Personal interview by Anne Dewees (February 1941).

[81] U. B. Phillips, "The Economics of the Plantation," *South Atlantic Quarterly*, 2:231–36 (July 1903).

[82] U. B. Phillips, "The Economic Cost of Slaveholding in the Cotton Belt," *Political Science Quarterly*, 20:257–75 (June 1905).

overcapitalization of land in the Corn Belt following the war of 1914–1918 is striking. In neither case was general sentiment in favor of abandoning the ownership system.

These early writings of Phillips were provocative and promising, but it is in his later writing that the matured product of his genius is found. Phillips published the rounded-out results of his studies in 1929 in a volume entitled *Life and Labor in the Old South.* [83] That book is in reality a historical and geographical study of the economics of plantation agriculture, with colorful sketches of life in the banquet halls and slave quarters. It gives a background in terms of which one can better understand the people, the soil, and the type of farming. He alludes to the way in which the invention of the cotton gin in the United States and modernized spinning and weaving machinery in England enabled the Occident to compete successfully with India in the production of cotton goods.[84] He shows that while the introduction of cotton had focused plantation agriculture upon that crop, which became the major staple in the development of agriculture from the tidewater Carolinas to the semi-arid regions of western Texas, a great deal of experimenting had to be done to find where the crop could be grown successfully. Efforts to push the crop farther north than nature intended were thwarted by frost, and thus by trial and error the northern borderline of the Cotton Belt was found.[85]

Phillips also presented a historical study of what he calls the "scale of the unit," which corresponds to our phrase "size of farm," but since many of the units were plantations, Phillips' phrase fits the circumstances unusually well. Phillips compared the different staples — cotton, rice, wheat, tobacco — from the standpoint of their influence upon the size of the farms.[86]

The content of the book is descriptive agricultural economics of the ante-bellum period. It shows that the study of agricultural history gives a student a sense of the significance of the combination of enterprises not as an all-time ordained system known in advance, but as the resultant of the pioneer's experiments which, through trial and error, lead the farmer to adopt a given system at one stage in the history of a given area, and later to reshape the system of farming as the soil loses some of its virgin fertility. The study of agricultural history gives also a sense of the dynamic forces which have resulted in changes in types of farming with the passing of the decades. Not only change in the fertility of the soil, but also changes in prices, changes in types of equipment available, changes in labor costs, all lead to readjustments. Especially does history show that with the

[83] U. B. Phillips, *Life and Labor in the Old South* (Boston: Little, Brown, and Company, 1929).
[84] Phillips, *Old South,* pp. 96–97.
[85] Phillips, *Old South,* p. 100.
[86] Phillips, *Old South,* p. 125.

development of the agriculture of regions not formerly occupied, the competition of the new regions may make it necessary to change the type of farming in older regions.

Phillips gave a vivid description of indigo production and pointed out that it was an enterprise that could, to advantage, be carried on with profit on the same plantation with rice, "the work in the two crops alternating in a dovetailed schedule."[87] A combination of forces eliminated the crop from the American list of staples.

> . . . the crop clearly yielded high profits for a time. But an increase in its output in the East Indies, together with an invasion of its American fields by a destructive caterpillar a decade or two before the end of the eighteenth century wrecked the industry in Carolina, Georgia and Louisiana alike.[88] In our own times a coal-tar product has driven vegetable indigo from the world of commerce.[89]

Much of the book is devoted to a description of agriculture and life on the great plantations. George Washington, the Carters, the Burgwyns, the Heywards, for example, were outstanding for their leadership. It is the description of their farming that gives an intimate view of plantation agriculture in the Old South. While *Life and Labor in the Old South* does not give the comprehensive view of southern agriculture that is found in Gray's two volumes, Phillips has given a more intimate view of certain phases of southern agriculture than has Gray. The works supplement each other in an admirable manner.

Historical-Geographical Work in Washington

The United States census has given considerable attention to history in summarizing the statistics for series of decades and has, from time to time, inserted historical sketches. The geography of agriculture has received even more attention. In the case of the major staples, cotton and the cereals in 1880 for example, the physical geography was noted. Statistical atlases, based upon decennial census data, were published each decade from 1870 to 1920.[90]

While these atlases gave special attention to the growth and expansion of population, considerable attention was given to agriculture, especially to the geographical distribution of farms, improved land, crops and livestock, and, for the later census dates, the tenure of farms.

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[87] Phillips, *Old South*, p. 118.

[88] This was not to be regretted on all scores, for the refuse from the vats had spread a most unpleasant stench and furnished breeding places for flies by the million.

[89] Phillips, *Life and Labor in the Old South*, p. 119.

[90] All but one of these was published by the Government. The one for 1880 was published by Charles Scribner's Sons (New York, 1883) under the title *Scribner's Statistical Atlas of the United States*. It was based largely on the data of the 1880 census and was prepared by Fletcher W. Hewes and Henry Gannett. Gannett had been geographer of the census of 1880 and, at the time this atlas was published, was Chief Geographer of the United States. The maps and charts were prepared by Hewes and the text was largely written by Gannett.

BAKER AND STINE

The historical-geographical approach to methods of research in the United States Department of Agriculture received a new impulse and some shift in emphasis when O. E. Baker was called from Wisconsin to the Office of Farm Management in 1912 by W. J. Spillman, Chief of that Office. Baker's native bent was for geography. He went to Wisconsin to study soils and remained to study agricultural economics. The historical series of dot maps of farm crops and livestock which Taylor was making intrigued Baker and aroused his interest in the historical changes as well as the geographical differences in agriculture.

Taylor was not in a position to finance adequately the historical and geographical work at Wisconsin. In December 1909 he had taken up with K. L. Butterfield the question of having the Carnegie Institution of Washington publish a historical atlas of American agriculture. Prior to that time Taylor had prepared more than 100 maps showing the expansion of American agriculture from 1840 to 1900. There was a map for each important line of production for each of the census dates. He believed that the publication of that series of maps would be an important contribution to the history of American agriculture. The response of the Carnegie Institution was not encouraging. Therefore when Spillman became interested in the historical-geographical approach to farm problems as carried on at Wisconsin, Taylor recommended Baker for the work.

Later O. C. Stine joined Baker in helping Spillman round out his work in farm management by adding historical and geographical methods to the survey and accounting methods. Stine and Baker supplemented each other. Stine's interest in the historical approach balanced Baker's interest in geography. Stine's appointment read: "to assist with investigations relative to historical development of agricultural enterprises." Taylor was glad to transfer Baker and Stine to the Office of Farm Management where there was promise that resources would be available for carrying that work to completion.

Settled in the United States Department of Agriculture, Baker and Stine drew up a plan for a comprehensive historical atlas of American agriculture. This work was to include the topography, soils, rainfall, and temperature by seasons, in a manner to indicate the length of the growing season by regions. With this physical basis in mind, a historical and geographical study of every line of agricultural production, both crop and livestock, was proposed. All of the bureaus of the United States Department of Agriculture were enlisted in that undertaking. Sections of the historical atlas appeared in print in folio form in accordance with the original plan as follows: *Frost and the Growing Season,* by W. G. Reed, July 15, 1918; *Cotton,* by O. C. Stine and O. E. Baker, Dec. 15, 1918; *Rural Population,* by E. A. Goldenweiser, Aug. 1, 1919; *Precipitation and Humidity,* by J. B.

Kincer, March 15, 1922; *Natural Vegetation,* by H. L. Shantz and Raphael Zon, October, 1924.

When H. C. Taylor became Chief of the Office of Farm Management on April 1, 1919, the work in agricultural history and geography was under way in a satisfactory manner. His statement before the Committee on Agriculture, House of Representatives, Dec. 19, 1919, was:

> The work in this section consists in bringing together the historical and geographical facts which lead to a better understanding of agricultural conditions.
>
> Especial attention is given to the history of agricultural development as influenced by geographic and economic forces. Studies of this kind are now being made of sheep, wheat, cattle, and dairying. The purpose of these historical studies is to show the effect of change in prices on production and to show which conditions are temporary and which are permanent in order to interpret present facts and forecast future developments.
>
> The geographic studies show the relation of climate, soils, topography, markets, the character and density of the population, and other geographic facts, to the utilization of land, farm practices, size of farms, and to the kinds of crops and live stock which can be grown with best results in each part of the United States. This work contributes to the solution of problems in farm organization, land economics, and various other lines of research by supplying facts which give breadth of view and balance to judgment.
>
> The responsibility of preparing the Atlas of American Agriculture is assigned to this section of the office, though much of the work is done in other bureaus of the Department of Agriculture. Much information has been accumulated in different bureaus as a result of the investigation of special problems. In the Atlas it is attempted to bring together and organize the best information available regarding the history and present condition of agriculture in every section of the United States.[91]

On February 14, 1919, the Agricultural History Society was organized. The purpose was to stimulate interest in the history of agriculture and to promote the writing and publication of contributions to that field. Rodney True was the moving spirit in effecting the organization, and the work has always been closely associated with the agricultural history work of the United States Department of Agriculture. For the first eight years the Agricultural History Society, which has from the beginning worked closely with the American Historical Association, found in the annual reports of the latter a channel through which to publish papers read at meetings of the Society. In 1927 the quarterly journal, *Agricultural History,* was inaugurated as a medium for the publication of research and documents pertaining to the history of agriculture.

THE YEARBOOKS FOR 1921-1925

In 1921, when Secretary H. C. Wallace faced the question of the kind of yearbooks he would like to have published during his term

[91] H. C. Taylor, "Statement of the Chief of the Office of Farm Management, H. C. Taylor, in support of the estimates for the Office of Farm Management for the fiscal year 1921," Agricultural Appropriation Bill *Hearings* before the Committee on Agriculture, House of Representatives, 66th Cong., 2nd Sess., December 19, 1919, Part 3 (Washington, 1920), p. 10.

of office, he decided that the agricultural situation was such that emphasis should be on the economic aspects. Wallace asked H. C. Taylor to draw up a plan for a new type of yearbook for the U. S. Department of Agriculture. Taylor knew that a yearbook could not be simply an economic document prepared by the Bureau of Agricultural Economics, but that all bureaus must have a part in its preparation. Experience with the historical atlas had proved that all bureaus could work together and that material from all the bureaus, when fitted together, made a more complete picture of a given line of agricultural production and marketing than any one bureau could itself produce. Furthermore, a great amount of material which had been prepared for the historical atlas, but not published because of adverse action of the Congressional Joint Committee on Printing, could be used in preparing a yearbook in which the economic aspects would be in the foreground and in which the physical and biological aspects would provide an essential factual setting for economic considerations.[92]

The first of that series contained a graphic summary which carried dot maps showing acreage and production for every important crop grown in 1919 and maps showing the location of each kind of livestock for 1920. Articles on crops were prepared by committees made up of representatives of the Bureau of Plant Industry and the Bureau of Agricultural Economics. The article on beef supply was prepared by a committee composed of representatives of the Bureau of Animal Industry and the Bureau of Agricultural Economics. The work was carried on in like manner for four more yearbooks. In 1925 William A. Taylor, the Chief of the Bureau of Plant Industry, said the joint work on the yearbooks had been invaluable in integrating the work of the Department and in the development of the understanding, co-operation, and good will essential to that integration. The 30 historical and geographical articles or monographs made the volumes for those five years outstanding in value for their time, and also for future reference.

One objective of that joint enterprise, as viewed by Wallace, was to stimulate all bureaus in the Department to think of the research they had in hand in terms of its significance to the farmer. In the end, that meant economic significance. It had been the idea of H. C. Taylor, when he went to the Department in 1919, that, while the major research work of an economic nature should be in a specialized economic bureau, economic ideas should pervade the whole Department, and that the criteria in experiments in nutrition, genetics, and all other research should be economic criteria. This would help to keep all work focused upon the farmer's interests. The joint year-

[92] The subjects treated were: 1921, wheat, corn, beef, and cotton; 1922, hogs, dairy products, tobacco, small grains other than wheat, and forestry; 1923, sugar, sheep, forage resources, land utilization, and land tenure; 1924, highways and highway transportation, farm credit, farm insurance and farm taxation, hay, poultry, and weather and agriculture; 1925, fruit and vegetable industries.

book project did much to promote that point of view. After the work was well started on the yearbooks it was seen that the folio form of the atlas, while essential for the physiographic features, was not essential for the presentation of the historical and geographic material relating to agricultural production and marketing. These materials could be presented satisfactorily and were in more usable form in a volume of the size of the yearbook, or the standard bulletin format of the Department. When this became clear, Taylor proposed to Wallace, and the latter to the Congressional Joint Committee on Printing, to withdraw all material from the atlas project excepting the permanent physiographic features. This suggestion was accepted by that committee which had earlier stopped the printing of the atlas. Work on sections of the atlas continued, and in the year 1936 the atlas appeared in that limited form.[93]

HISTORICAL SETTING FOR FARM MANAGEMENT SURVEYS

For a time the historical-geographic work in the Department was closely associated with the farm management studies. The Chester County, Pennsylvania, survey bulletin had an introduction giving the historical-geographic setting of the area studied, although it did not sense too well the dynamic forces that were in action at the time. The time had come in Chester County for enlarging the unit of farm activity. Opportunity for acreage expansion was poor. Farmers were casting about to find a means of expanding business without expanding acreage. The dairy industry was the most important means of intensifying the farming. Poultry and tobacco growing were other methods of intensifying. A few farmers had hit upon mushroom growing as the answer to this question of how to increase business on a given area. When the survey was made, mushroom farmers were making good money but were counted exceptional. They were spoken of in the bulletin as follows:

> *Special farms.* — As previously stated, 27 of the owner farms found in this survey were either wholly or partly devoted to the production of hothouse products, mainly mushrooms. A few farms produced hothouse tomatoes, and two of them derived a large per cent of their income from carnations. For the year of this survey (1911) these special farms made very satisfactory profits, considerably larger than farms of other types in this region, but it would be ruinous from the standpoint of profits for the farmers of this region generally to undertake a hothouse business. Overproduction would be inevitable.[94]

Later it was recognized that the farms which were thrown out as exceptional carried the most important lesson the survey should have revealed. The area is noted today for its mushroom production. It would appear that in spite of the historical introduction the men

[93] U.S.D.A., Bureau of Agricultural Economics, *Atlas of American Agriculture,* prepared under the supervision of O. E. Baker (Washington, 1936).

[94] W. J. Spillman, H. M. Dixon, and G. A. Billings, "Farm Management Practice of Chester County, Pa.," U.S.D.A., *Bulletin* 341 (Washington, 1916), p. 52.

who made the Chester County survey approached their work with a static mind that was not alert to all the signs of significant changes which were in evidence at the time. That was indicated by the statement:

> Fortunately, however, conditions were approximately normal in this area at the time these data were obtained except in the matter mentioned, and in the fact that the price of hay was somewhat above normal. In the main, therefore, the results are reliable.[95]

Another example of the use of the historical and geographical method of providing a setting and an understanding of the changing elements in the situation which farmers had to face as they looked to the future is found in "A Study of Farm Organization in Southwestern Minnesota."[96] In that bulletin eight pages were devoted to "Description and History of Agriculture of the Area." That the dynamics of farm planning were not lost sight of by the authors of that bulletin is indicated by the opening sentences:

> Farmers are constantly making changes — some at one point, some at another — all endeavoring to benefit by their own experiences and the experiences of others in so far as these come to their knowledge and are satisfactorily proven. The differences in the organization and management of farms are the results of these changes. These differences are sometimes striking; but generally they are so moderate, so numerous, and so variable in their effects on final results as to obscure the relationships of the factors of the problem of which they are only parts.
>
> The analytical study here summarized was undertaken in order to measure the effect of differences in methods and material resources on the efficiency of farm operations, so that farmers to whose farms the results apply may make such prompt and satisfactory adjustments in their productive enterprises as will increase their returns. The farmers who contributed the details of their operations live in Cottonwood and Jackson Counties, Minn., and represent the present general scheme of farm organization and operation in effect in that section of the State. Their present practice reflects their past experience and their theory of production economics, so far as circumstances have made it possible to put them into effect.
>
> The discussion of the data is presented in three parts:
>
> 1. An account of the development of the agriculture of the area from the time of settlement, showing the changes in the crop and livestock enterprises, with some of the main reasons therefor, and leading up to the present conditions under which farming is conducted.
> 2. A detailed statement and analysis of the amounts and distribution of labor and materials used in the production of the different crops and classes of livestock on the farms contributing data and of the miscellaneous work incident to the operation of these farms.
> 3. A discussion of the principles involved in the applications of the data to the constantly recurring problems of choice, combination, and adjustment of enterprises to changing economic conditions and to other more local conditions on particular farms, together with illustrations.[97]

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[95] Spillman, Dixon and Billings, "Chester County," p. 36.

[96] G. A. Pond and J. W. Tapp, "A Study of Farm Organization in Southwestern Minnesota," U.S.D.A., *Department Bulletin* 1271 (Washington, 1924). Published also as Minnesota Agr. Exp. Sta. *Bulletin* 205 (University Farm, St. Paul, 1923).

[97] Pond and Tapp, "Southwestern Minnesota," pp. 1–2.

That was the first of a series of bulletins in which the budgeting idea, worked out in the light of historical, geographical, and accounting data, was in the process of evolution as a practical approach to individual farm planning. For several years the history section of the Bureau of Agricultural Economics gave primary attention to providing material for bulletins on farm management and marketing.

THE WHEAT SITUATION OF 1923

Another piece of historical research by the Bureau of Agricultural Economics dealt with the wheat situation[98] and was published in 1923 as a report to the President of the United States by the Secretary of Agriculture. That historical and comparative (i.e., geographical) study of wheat production and prices was undertaken because the wheat industry of the United States was in a period of serious depression. The report contains regional comparisons within the United States, as well as international comparisons on a world supply and demand basis. Prices, past and current, were compared in terms of the purchasing power of wheat, in terms of the commodities farmers buy, as well as in terms of money. There is also a comparison of the trend of wheat prices with the price trends of other farm products. That report had the objective of pointing out the readjustments farmers might well make to improve the price of wheat. It was recognized, however, that the wheat supply and demand of the whole world is involved in the effort to improve wheat prices. That led to another objective of the bulletin, that is the development of national policies which would aid the farmer in securing parity prices for his products.

The study of the range cattle industry, made by Edward E. Dale[99] while he was working for and with the Bureau of Agricultural Economics, advanced some suggestions relating to the improvement of the cattle industry, but the primary purpose for which this project was set up by the Bureau was to tell the interesting story of this part of the national economy — the beginning of the industry in Texas in the second quarter of the nineteenth century, the development of ranching on the central and northern plains, the shifting of the areas available for cattle ranching, and the relation of the range cattle industry to the feed lots of the Corn Belt. The story was brought down to the end of the first quarter of the twentieth century.

E. E. EDWARDS — AMERICAN AGRICULTURE

Another contribution of the Division of Statistical and Historical Research which illustrates the historical work in progress during the period covered by this book, although published later, is the article by Everett E. Edwards on "American Agriculture — The First 300

[98] "The Wheat Situation," U.S.D.A., *Yearbook*, 1923 (Washington, 1924), pp. 95–150. (First published by the U.S.D.A. as an unnumbered bulletin.)

[99] E. E. Dale, *The Range Cattle Industry* (Norman: University of Oklahoma Press, 1930).

Years." [100] That is a well written summary, which Rodney Loehr said "is the only satisfactory general account." [101] It has the sweep of time and the breadth of view essential to a comprehensive historical-geographical study of American agriculture as an expanding, evolving industry in the process of changing from a self-sufficing to a commercial economy, from a local non-commercial economy to a commercial economy national and international in scope. Edwards' article is not just the product of a careful historian; it is also the product of an agricultural economist who sees, and takes note of the economic forces which provide the dynamics that result in change.

In reading Edwards' brief, glowing story, one is continually conscious of human beings responding to motivations which make for change. As soon as population pushed up the Mohawk to Herkimer County, New York, the farmers of New England and along the Hudson River began to feel the dynamics of competition from the West. With the completion of the Erie Canal, the pressure of competition became greater. When the railroad network opened up all the North Central States as competitors in supplying eastern markets with bread and meat, the eastern farmers had long since commenced to change to crops which would not stand long shipment. In the meantime eastern city markets had grown to proportions which made them excellent markets for fruit, vegetables, fresh milk and hay — articles in the supplying of which the new West was not able to compete, either because of the bulk or the perishability of the individual products. That was the setting in which the forces of change transformed eastern agriculture to fit changing conditions.

That change did not come about in one day or in one season. But, compared with the speed of transformation in the previous 200 years, the changes of the last half of the nineteenth century came with great rapidity — too fast for the static minds of the farmers of the time. The slowness, the resistance to change, as well as the costs and the time required to learn new types of farming, account for the suffering which accompanied the readjustments which were inevitable. The vividness with which Edwards portrays, in about 100 pages, the progress in American agriculture makes his article a distinct contribution to the subject of agricultural economics. It is an excellent example of the use of the historical and comparative approach to the study of the farmer's economic problems. Every student of agricultural economics should read and re-read that summary of agricultural history and then broaden and deepen the picture in his mind by reading the many references appended to it. By so doing, the student will come to sense economic forces in action. He will come to feel the imperative logic of time, space, and human-

[100] E. E. Edwards, "American Agriculture—The First 300 Years," U.S.D.A., *Yearbook,* 1940 (Washington, 1941), pp. 171–276.

[101] R. C. Loehr, "Aspects of Agrarian History" (a book review), *Journal of Economic History* 6:97 (May 1946).

ity in a manner which tempers the logic of the academic mind. The writers of agricultural history may be divided into two classes, (1) those who write a human interest story without reference to the economic significance, and (2) those who have for their purpose the portraying of economic and social forces in action. The writings of the former are perhaps of broader, general interest and can be used and interpreted by economists. Works of the latter contribute to the scientific study of economic society and provide one of the most effective methods of presenting in useful form the economic principles which every man needs to know.

Ulysses P. Hedrick — New York Agriculture

Ulysses P. Hedrick wrote a most interesting volume of the "human interest type called, *A History of Agriculture in the State of New York*.[102] In the preface he warned the reader not to expect the economic type of history:

> This is not a history of agriculture as an economic activity. The economist may close the book at once. . . . It is not a source-book of statistics; it is not a treatise of agricultural philosophy; it does not tell how to farm; nor draw lessons from how our ancestors farmed.[103]

In taking this view of his work Hedrick was wise. As a horticulturist and as director of the New York State Agricultural Experiment Station at Geneva, he knew much of agriculture and the work of many people in the field. It turns out, however, that he wrote a history which can be turned to valuable account by the teacher of economic history, who is able to use the book as a reference work for his students and who can himself point out the economic significance of much of the material. This is particularly true of the chapters on "Turnpikes," "Country Life a Hundred Years Ago," "Country Food and Drink," "Waterways," "Railways," "Human Labor Displaced by Machinery," "Farm Crops," and "Livestock Industries." In those chapters Hedrick drew pictures in terms of which the economist can trace the economics of the transformation of the early self-sufficing economy of rural areas into the commercial economy of modern times. A few excerpts will illustrate this point.

> The Post Road from Albany to Buffalo, through Utica, Auburn, and Geneva, was for 50 years the main artery for west-bound immigrants and for east-bound drovers and freighters of farm produce. The building of the Erie Canal seemed to have affected traffic on this famous pike but little, but the New York Central Railroad quickly put it out of business. The turnpike was a toll road with toll gates about every six miles. Most of the toll-gate keepers retired as rich men—it was said they made an equal division of the moneys received for the toll companies. . . . The charter names the route as

[102] U. P. Hedrick, *A History of Agriculture in the State of New York* (Albany, printed for the New York State Agricultural Society, 1933).
[103] Hedrick, *New York*, p. v.

the Seneca Turnpike, but "Genesee Pike" was more commonly used by the people who passed over it. . . .

The Seneca Turnpike from Albany west was to Ohio and the regions beyond what the ancient Via Appia was to the country south of Rome. In its earliest days so many immigrants to Ohio passed over the road that it was sometimes called the "Ohio Trail.". . . The trek and trudge over the old turnpike was so continuous, says one writer, that east-bound travelers journeying against the immigrant tide were hard put to it to keep their right of road. The traveler east was always in sight of wagon trains, pack horses, and long files of covered wagons. The traveler west had to contend with droves of cattle, sheep, pigs, and files of heavily loaded freight wagons. . . .

There were several stagecoach companies who made use of the Great Western Turnpike under a combination such as we now have in railroading, banking, and large business institutions of every kind. They worked in close agreement to regulate prices and keep down competition. . . .

It was not until the railroads came that stagecoach travel began to wane. The canals did little harm in the way of competition. During the winter, staging went on whereas canalboats and steamboats were frozen in. Where there was competition between canal packets and stagecoaches, the coach was chosen by passengers who had the means to pay, and only emigrants took the packet for a through trip. It is true that the packetboats were a more comfortable means of travel, but they were slow and the scenery was monotonous. When the novelty of canal travel wore off, passengers went back to the stage and let the boats haul freight. Sometimes passengers took the stage for the day and changed to a packet at night, which gave them a chance for a good night's sleep, if weather was propitious as to heat and the boat not overcrowded. Of freight competition DeWitt Clinton wrote:

"Produce is carried by land from Utica to Albany for 8s per 100 lbs.; by water to Schenectady, for 6s. When the Canal Company reduced the toll, the wagoners reduced their price, in order to support the competition. Country people owe merchants, and pay their debts by conveyances of this kind, and in times when their teams are not much wanted for other purposes." . . .

Most of the men employed by the proprietors of stagecoach lines were men from the farms, and since it required a small army of drivers, runners, and agents to keep the stages of the State on the roads, farm labor was depleted to supply the post roads. There were, as might be expected, stage associations of employees and proprietors. Employees organized to keep up the wages, to regulate hours, and for such mutual protection as labor unions now provide. Owners of stage routes organized to keep out new comers in the business, to keep down wages, to regulate drink which their employees seemed always to need, and for purposes of advertising.[104]

The story of the development of the Erie Canal and its branches, and the way in which they made commercial agriculture and city growth possible by connecting farm and market, provide a part of the picture which the economist needs to hold in mind as a background in terms of which to think of current problems. To quote Hedrick further:

Agriculture was greatly helped by canals in other ways than by lowering freight rates. Many farmers living shorter or greater distances from a waterway found opportunity to make money, to travel, and to visit the great cities. They invested in boats and usually as owners and captains spent their summers on the canal; their winters on the farm. They carried grain and all

[104] Hedrick, *New York,* pp. 176, 178, 180, 186–87.

the products of farm and forest to New York and came back loaded with the wares of eastern or foreign manufacturers. Moreover, the canal required droves of horses and mules, foaled and fed on the farms of the State. Every community through which a canal passed prospered by reason of supplies, man, beast, and boat required. The "canaler" was domiciled on the canal-boat from the opening to the close of navigation and rural bred people relieved the dull monotony of farm and small town life by the social amenities that the canal and the ports it touched gave.

Canals were not all to the good in rural New York. For many years much of the western emigration was through the southern counties to the Allegany River, then down to Pittsburgh. The towns and farms along the southern turnpikes throve mightily on the coming and going of emigrants, drovers, freighters, and stagecoach passengers. The Erie diverted this traffic to the great detriment of all this part of the State. . . .[105]

In addition to canals, Hedrick pointed out that rivers were of primary importance in providing transportation of farm products:

The transportation of western New York farm produce down the Hudson by steam really began in the 1840's. Cattle, sheep, and hogs bound for the city slaughter-houses and horses for the New York street-car lines began to be shipped by steamboat in enormous numbers. Travelers complained that the chorus of mooing, bleating, grunting, and neighing rendered attempts to sleep futile in boats that carried livestock. A little later, perishable fruits, vegetables, and dairy products were shipped more and more by steamboats, but grain, hay, straw, and the coarser products of the farm long continued to go down the river in canalboats. Railroad competition eventually came to take these commodities from the waterways of the State.[106]

Hedrick has told an interesting story in such a way as to leave clear pictures in the mind of the reader.

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[105] Hedrick, *New York*, p. 253.
[106] Hedrick, *New York*, p. 238.

15.
Agricultural Surveys

THE TERM AGRICULTURAL SURVEY is used to designate a great variety of "look and see" methods of gathering the facts essential to creating in one's mind a picture of the agriculture of any given area.

Types of Surveys

When the unit of an agricultural survey is a region, and the material is in general descriptive terms covering farms of that region, the survey may well be designated a *regional survey* of agriculture. If in a regional survey the facts for a specific farm are sometimes given as typical, that is incidental to the description of the farming of a region. The regional survey is likely to be comprehensive with respect to subject matter. The physical, the biological, and the economic aspects have usually been included. The economic aspects brought into the picture include markets and prices, competition of farmers with other farmers at home and abroad, political influences affecting prices and land tenure, etc.

When the unit of the agricultural survey is a single farm and the facts presented are from specific farms, the survey is properly called a *farm survey*. When all farms in a township have been surveyed and facts gathered on individual farms summarized or tabulated, the material then deals with a regional area, but because of the way in which the data were gathered, it should be called a farm survey to distinguish it from the more general type of descriptive regional survey. A farm survey may include any facts, physical, biological and economic, which affect farming operations. If the survey deals primarily with the economics of farm management, it should be called a *farm management survey*.

In the farm management survey, as such, the farmer is asked to give the facts about his business. This includes an inventory at the beginning and at the end of the year and the receipts and expenditures, crop areas and yields, livestock enterprises, etc. In the farm management survey, the facts gathered and tabulated relate to what goes on

within the fences of the individual farm. These activities on the farm are influenced, of course, by a great variety of outside forces and conditions which must be taken into account in order to understand fully why farmers are producing just the things they are, but the farm management survey, as such, does not include this outside material. Outstanding examples of the farm survey and farm management surveys are the federal censuses of agriculture and the farm management surveys initiated by Hunt, Warren, and Livermore in their Tompkins County surveys.

There is a wide difference in regional agricultural surveys as they have been made, with respect to how far the surveyor went into detail in describing the agriculture of an area. The extensive type of survey is often called an agricultural tour. In the intensive type, the surveyor takes a smaller region and studies it in greater detail over a longer period. The two outstanding English regional surveyors of agriculture of the eighteenth century provide examples of these differences. Arthur Young's work and writings are examples of the extensive type based on agricultural tours, whereas the writings of William Marshall are based upon an intensive study of one county at a time and extending through all seasons of the year.

British Agricultural Surveys

The Doomsday survey made in 1085–86 by William the Conqueror is the earliest survey of English agriculture on record. In more recent times a stock-taking of agricultural resources and a study of farm problems have become a habit of the British. For present purposes, attention will be called especially to surveys made in the eighteenth and nineteenth centuries which have to do with adjustment of British agriculture to changing market conditions resulting from the industrial revolution and expansion of Britain's foreign commerce, and especially those which influenced the early surveys in the United States.

ARTHUR YOUNG'S TOURS

A six weeks tour by Arthur Young in 1767 initiated his descriptive studies of English agriculture. Young journeyed through several southern counties of England and Wales, describing the husbandry in "minutes" written on the spot.[1] Young claimed that this was a new method which had never before been used either in Great Britain or any other country of Europe. His second tour made in 1768 took more time, covered more territory, and was exclusively for the purpose of making an agricultural survey. Minutes of that journey were published in 1770 in four volumes under the title of *A Six Months Tour Through the North of England*.[2] In 1770 he continued his studies in

[1] A. Young, *A Six Weeks Tour Through the Southern Counties of England and Wales* (London: W. Nicoll, 1768).
[2] A. Young, *A Six Months Tour Through the North of England* (London: W. Strahan, 1770).

the East of England. In 1771 the results were published in four volumes under the title, *The Farmer's Tour Through the East of England.*[3] Young's writings were published in many languages on the Continent.[4]

The purpose Young held in mind is indicated in this quotation:

> It has been more than once remarked that there is no country that possesses so bad an agriculture but something useful may be learnt from it. The truth of this observation is apparent in every one of our counties, perhaps in every *hundred.* Practices that are found highly advantageous in one district are totally unknown in another; although the soil, exposure, climate, etc. etc. be exactly the same. The farmers in one place grow rich by methods which would enrich their brethren in another but remain quite unknown. Can it be thought useless to render all such local knowledge general? To let every cultivator see all the different methods that are practiced upon such land as his own; that he may know from them his own deficiencies and learn at the same time to remedy them; and this not from the *ipse dixit* of an author or the opinion of an individual, but from the genuine practice of his *brother farmer* in another place.[5]
>
> It is the design of this little register to spread useful knowledge of all sorts, to display to one part of the kingdom the practice of the other, to remark wherein such practice is hurtful and wherein it is commendable. To draw forth spirited examples of good husbandry from obscurity, and display them the proper objects of imitation—a purport that can scarcely be condemned, if the execution is but good, the design will defend itself.[6]

The method of procedure used by Young in his second and third surveys is indicated by this excerpt from the *Preface of A Six Months Tour Through the North of England*:

> Some private business carrying me into the south of Wales, gave birth to the *Six Weeks Tour,* which I wrote chiefly as an amusement on the road; nor was I sensible that the papers might be of use, till I sat down to consider them again. It then appeared to me, that a view of English agriculture would be serviceable.
>
> The public, by a very kind reception of it, has confirmed the idea, and induced me to undertake a more extensive Tour—But as my time before was limited, and I had other things to regard besides my book, I determined to have no other employment in my new journey, and to take such means of procuring intelligence, as were open to a person, who could command so few advantages.
>
> With this view, I inserted the following advertisement, in many of the London papers, and in all the country ones, published near my intended route.
>
> "The author of the *Six Weeks Tour* thro' the southern counties of *England* and *Wales,* proposing to undertake this summer a Tour through The North of England, begs leave to request such of the nobility, gentry, landlords, farmers, and others, as possess, or are acquainted with, any particular improvements, experiments, customs, implements, etc. in the agriculture of the following counties, *viz. Hertfordshire, Bedfordshire, Hunt-*

[3] A. Young, *The Farmer's Tour Through the East of England* (London: W. Strahan, 1771), Vol. I, p. xi.

[4] The report of Arthur Young's travels in France during the years 1787, 1788 and 1789 were particularly noted for their political significance.

[5] A. Young, *A Six Weeks Tour Through the Southern Counties of England and Wales* (2nd ed.; London: W. Strahan, 1769), pp. vii–viii.

[6] Young, *Six Weeks Tour Through the Southern Counties,* p. x.

ingdonshire, Northamptonshire, Rutlandshire, Leicestershire, Nottinghamshire, Lincolnshire, Derbyshire, Yorkshire, Durham, Northumberland, Cumberland, Westmoreland, Lancashire, Cheshire, Shropshire, Staffordshire, Worcestershire, Warwickshire, and *Buckinghamshire,* to inform him of such circumstances, with exact directions to the places where such improvements, etc. are carried on. He should not take the liberty of this general address to persons unknown, were it not, that he might probably, without this previous intimation, overlook many improvements and experiments in husbandry, and return unacquainted with many practices, implements, etc. which deserve to be universally known. And it certainly is of indisputable consequence to the welfare of agriculture, that every thing commendable in the practice of it, should not be confined to particular districts, but published for general good. The Author is not unacquainted with the improvement of waste lands by marle, clay, chalk, etc. with the clover, turnip, and carrot husbandry; and the culture of the modern artificial grasses; and shall with the utmost readiness impart the little knowledge he possesses, to any who may think his opinion of the least consequence, as he travels with the sincerest desire of being serviceable to the interests of husbandry. His principal aim is agriculture; but he shall not pass the seats of the nobility and gentry, without viewing them."[7]

In general it may be said of Arthur Young's writings that, so far as they related to agriculture, they had for their purpose choosing the best new elements in the agriculture of the times and making them more widely known. He got a large share of his information from the "gentlemen farmers" as distinguished from the rank and file of farmers. These gentlemen farmers were carrying on experiments which gave the basis for determining what new lines of agriculture were profitable.

Tull, Townshend, Robert Bakewell and others had made important experiments. The Norfolk system of farming which was at that time taking the place of the old "three-field system," was providing the basis for keeping far more livestock than it had been possible to keep under the old system. Under the three-field system, crop land was fallowed one season out of three. Fallow land was usually plowed two or three times to destroy weeds and give tilth to the soil. It was then seeded to wheat in the autumn. The wheat crop was followed by a spring grain, either barley or oats. The new system of farming introduced turnips and clover into the rotation. Under the new agriculture, the three-field system, with its bare fallow which had existed in English agriculture since Roman times, was to be abandoned. The rotation was expanded into a four-course system which started with turnips instead of bare fallow, followed by barley with which clover and grass seeds were sown, providing pasture in the autumn following the harvesting of the barley and a crop of hay the following year, after which the ground was plowed and seeded to winter wheat. There were many variations of this system, but the important element in the new system was the provision of great quantities of cattle feed through the production of turnips, hay crops

[7] A. Young, *A Six Months Tour Through the North,* Vol. 1, pp. iii–v.

and artificial grazing. This had become important because of the industrial revolution in England which had resulted in the growth of large centers of population dependent upon commercial farmers for food.

Young, known as "the evangelist of the new agriculture," rendered a great service and earned an important place in agricultural history because his teachings were timely and helped the farmers of England adjust themselves to permanent changes in the outside world. Young was influential abroad as well as at home. George Washington read Young's books and carried on a correspondence with him from 1786 to 1794.

WILLIAM MARSHALL'S SURVEYS

While Arthur Young was the best known and most popular agricultural writer of his time in England, William Marshall developed a system of farm surveys far more detailed than those of Young. In February 1780, Marshall submitted to the Society of Arts in London, which had a Committee on Agriculture of which Young was chairman, a plan for making surveys of the agriculture of the various regions, and the publication of experiments and observations concerning agriculture and the weather. The plan was commended by the Society of Arts but was not promoted by that organization, which was not carrying on such work.

Marshall's plan differed from the method Young had used. Young's work is best described as extensive surveys or tours, whereas Marshall's surveys were more intensive. Marshall spoke of them as surveys although he gave his books the title *Rural Economy*.

Marshall's proposed plan was to spend a full year in the area to be surveyed with no other responsibility than that of studying the agriculture and practicing the various arts which were exhibited and with which he had not previously been familiar. This full year in one area Marshall claimed to be necessary in order to observe all activities of the farmers of the area through all processes. The plan provided that the surveyor should make his headquarters on one farm while he studied and recorded the practices in detail. Then he was to visit many other farms to study their practices. He was to attend the markets and the fairs to note the way in which the farmers bought and sold, for example, the way in which they sold grain and the way in which they bought and sold clover seed, and the way in which they bought feeder cattle and sold the finished cattle when they were ready for slaughter.

Not finding financial backing for his ideal plan, Marshall began his project by making his first survey in Norfolk while serving as an estate agent. He commenced the work in 1783, and the two-volume report on it was published four years later.[8] The preface is dated

[8] W. Marshall, *The Rural Economy of Norfolk: Comprising the Management of Landed Estates, and the Present Practise of Husbandry in That County* (London: T. Cadell, 1787).

London, February 1, 1787. The first volume is a description of the agriculture, whereas the second volume reproduces the "minutes" which he noted down as he proceeded with his survey work, with just such modifications as seemed necessary in order to eliminate oddities in measurements and weights and in terminology which might not be readily understood by the reader.

The agricultural economist will ask "What proportion of Marshall's work was devoted to that which came to be called agricultural economics or the economics of farm management?" The two volumes on the rural economy of Norfolk contain 775 pages, 62 pages of which may be classified as economics. The remainder deals with the physical and biological aspects of the agriculture of the area. The topics of an economic character are: land ownership and the size of farms, the enclosure of scattered strips into consolidated farm areas, the economic status of the farmers, forms of land tenure, including description of the methods used for compensating outgoing tenant farmers for unexhausted improvements, the Norfolk system of crop rotation, the method of paying labor a lump sum for the entire harvest period and boarding the laborers throughout that period, the methods of payment for the flailing out of grain, and descriptions of the marketing of livestock, grain, clover seed, etc. All of the material relating to land tenure is in the descriptive section of volume one and is not found in the "minutes" in volume two, but most of the material relating to the markets and fairs is found only briefly discussed in the text of the first volume and treated in considerable detail in the second volme.

The pattern developed in the study of the agriculture of Norfolk was followed in the study of the rural economy of Yorkshire (1788), of Gloucestershire (1789), of the Midland Counties (1790), of the West of England (1796), and of the Southern Counties, including Kent, Surrey, and Sussex (1798).

YOUNG AND MARSHALL CONTRASTED

While William Marshall used more thorough methods of studying agriculture than did Arthur Young, the latter knew far better how to get along with people and was the natural leader when the time came to organize the Board of Agriculture, established by act of Parliament in 1793. That Young appreciated the quality of the work done by Marshall is evidenced by the fact that, while secretary of the Board of Agriculture, Young arranged for surveys of all the counties of England, Wales, and Scotland, following the pattern developed by Marshall. Of Marshall, Young wrote:

> I never see and converse with him but I think I see the haughty, proud, illtempered, snarling, disgusted character which he manifested in his connection with Sir John Sinclair [President of the Board of Agriculture]. A thousand pities that so extremely able a man, for of his talents there can be no question, should not have more amenity and mildness. Government

however, should have promoted him without any doubt, and it is a blot in their scutcheon that they have not done it.[9]

Rowland E. Prothero contrasted Marshall and Young as follows:

> Marshall has none of the charm of Young. He is a heavy, didactic writer. But his system is better; his generalizations are more conclusive, and less contradictory; his facts are better arranged; he was, also, a better farmer. . . .
>
> Young was a man of strong prejudices. He was also wanting in power of generalization. But he worked untiringly for what he believed to be the progress of good farming. On this object were concentrated the chief labours of his life—his enquiries, experiments, researches, his collections of statistics, his notes of useful practices, his observations on new methods. His eager face, with its keen eyes and aquiline features, expressed the vivacity of his temperament, just as his tall slender figure indicated the restless activity of his body. A gay and charming companion, his enthusiasms were infectious. He was the soul and inspiration of the progressive movement. To him, more than to any other individual, were due the dissemination of new ideas on farming, the diffusion of the latest results of observation and experiment, the creation of new agencies for the interchange of experiences, the establishment of farmers' clubs, ploughing matches, and agricultural societies and shows.[10]

While studying in the library of the Royal Agricultural Society of England in November, 1899, H. C. Taylor inquired of the librarian why the name of Arthur Young was so often mentioned and the name of William Marshall so rarely. Taylor's study of the writings of the two men had led to the conclusion that Marshall had done the better job. The librarian replied, "Young had a personality that people liked." But this sentence does not carry all the impression the librarian gave. His gestures and facial expression showed that he was enthusiastic about Young but had no such emotion for Marshall.

ALBRECHT THAER

Marshall's writings, as well as those of Young, were used by Albrecht Thaer (1752-1828) in his three volumes on English agriculture.[11] The foreword to the first edition of the first volume was dated March 20, 1798, but it states that the volume was largely written in 1795. The third volume was published in 1804. This work of Thaer's draws upon Young more extensively than upon Marshall, and has for its purpose giving the leaders in German agriculture an understanding of the importance of substituting a rotation of crops including turnips and clover, for the old three-field system of husbandry,

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[9] A. Young, *The Autobiography of Arthur Young, With Selections From His Correspondence,* ed. by M. Betham-Edwards (London: Smith, Elder and Co., 1898), p. 427.

[10] R. E. Prothero, *English Farming, Past and Present* (London and New York: Longmans, Green and Co., 1912), pp. 196, 197. The preface of this book states that it is "Based on an article which appeared in the *Quarterly Review* for 1885. The article was subsequently expanded into a book, published in 1888 by Longmans under the title of *The Pioneers and Progress of English Farming.*"

[11] A. Thaer, *Einleitung zur kenntniss der englischen landwirthschaft und ihrer neueren practischen und theoretischen fortschritte in rücksicht auf vervollkommnung deutscher landwirthschaft für denkende landwirthe und cameralisten,* 3 vols. (Hannover: Ben den Gebrudern Hahn, 1798–1804).

and the introduction of better breeds of livestock. Thaer was the "evangelist of the new agriculture" in Germany.

Thus the influence of Young and Marshall and their methods of studying agriculture and disseminating information became effective on the Continent of Europe, as well as in America where George Washington took the lead in securing, testing and interpreting English ideas on agriculture.

JAMES CAIRD'S SURVEY, 1850-51

The survey made of England by James Caird, commencing in 1850, was sponsored by *The Times*. The "Letters" appeared concurrently in that paper and were published in book form in 1852. Caird travelled in 32 of the 40 counties of England and made detailed notes on the condition of agriculture, and published the results in a volume entitled *Caird's English Agriculture in 1850 and 1851*.[12] That is a volume of 550 pages and contains much material descriptive of English agriculture. In speaking of the methods he had used in studying British agriculture, Caird said:

> All the matter contained in these "Letters" [to *The Times*] was obtained by personal inquiry and inspection, principally by walking or riding carefully over individual farms, in different districts of each county, accompanied by the farmers—by traversing estates with the landlord or his agent—and by seeking access to the best and most trustworthy sources of local information.[13]
>
> I was careful to note good examples of farming in the several counties, and have described them in minute detail, for the information of farmers in the same and other counties.[14]

Caird was quite conscious of following in the footsteps of Arthur Young. He said:

> Since Arthur Young's tours in 1770, there has been no similar inquiry. . . . The information on which his data are based, seems to have been the same as ours—personal inquiry from the most trustworthy sources.[15]

Caird's survey of English agriculture indicated that the farmers were suffering from low prices, particularly of wheat. The farmers wanted protection restored. Caird favored free trade. In 1848 he had published a pamphlet on *High Farming . . . the best Substitute for Protection*. Prosperity returned,[16] but it was due to outside world conditions, not to facts discovered and published by Caird in his letters to *The Times*.

James Caird did not confine his studies to conditions in his homeland. He travelled in the United States and made a careful study of the conditions under which the farmers of the United States were

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[12] J. Caird, *English Agriculture in 1850–51* (London: Longman, Brown, Green, and Longmans, 1852).
[13] Caird, *English Agriculture in 1850–51*, p. x.
[14] Caird, *English Agriculture in 1850–51*, p. ix.
[15] Caird, *English Agriculture in 1850–51*, pp. 473–74.
[16] See Prothero, *English Farming, Past and Present*, p. 371.

competing with the British farmers. In 1859 Caird published a book entitled *Prairie Farming in America.*[17] In that book Caird gave a keen analysis of the situation in which the British farmer found himself at that time. He pointed out that the keen competition for the ever diminishing supply of land available for agricultural purposes in Great Britain, and the resulting high rents, along with high fertilizer costs, put the British farmer in a weak position to meet the foreign competition in his home market. Caird's travels in the United States gave him a clearer understanding of the problems of the British farmer than he gained from his studies for *The Times* in 1850 and 1851.[18]

In making comparisons of prices and costs in the United States and Great Britain, Caird said:

> These prices may be reckoned, on an average, as about one half the value of the same articles in England. If the cost of production in the two countries were nearly the same, the price of land of equal quality should be twice as great in England as in Illinois. It is, however, thirty times as great, *and in this disparity consists the advantage which a settler may hope to reap by buying land in Illinois.*
>
> The cost of production is an important element of price. Manual labour is 100 per cent dearer in Illinois than in England; but the cost of keeping horses is 100 per cent cheaper, and as a larger proportion of the work of the farm is done in America by horse power and machinery than in England, the cheapness of horse labour will fully compensate the prairie farmer for the dearness of manual labour. The cost of production, in so far as labour is concerned, is thus much alike in the two countries.[19]

JAMES MACDONALD

Another undertaking of outstanding importance in the history of the development of surveys of agricultural conditions is the study of the competition of meat production in America made by James Macdonald in the summer of 1877.[20] Macdonald was a member of the editorial staff of the *Scotsman,* a daily paper published in Edinburgh. Macdonald was sent by the *Scotsman* to make a study of meat production in America. This was thought important at the time because the introduction of refrigeration in the shipment of beef across the Atlantic was resulting in great anxiety on the part of the breeders of beef cattle in Great Britain. "About a thousand tons of American beef and mutton, in perfectly sound condition, are now landed every week at Liverpool and Glasgow." [21]

Macdonald travelled throughout the cattle and sheep producing regions of the United States. He also studied the marketing and slaughtering processes in New York and Chicago. The results of his

[17] J. Caird, *Prairie Farming in America, With Notes by the Way on Canada and the United States* (London: Longman, Brown, Green, Longmans and Roberts, 1859).
[18] Caird, *Prairie Farming in America,* pp. 1–3.
[19] Caird, *Prairie Farming in America,* pp. 83–84.
[20] J. Macdonald, *Food From the Far West* or *American Agriculture* (London: William P. Nimmo, 1878).
[21] Macdonald, *Food From the Far West,* p. xii.

investigations were first published in the *Scotsman* in the summer of 1877 and appeared in book form in 1878.

In general terms, his conclusions were that increasing quantities of chilled beef would continue to flow into the British market, but that it would come in competition primarily with the inferior grades. His view was that "prime" beef of England and Scotland had its own particular patrons who would continue to pay good prices for the high quality product. He said, "It is therefore plain that the aim of every farmer ought to be to produce none but first-class beef, or at any rate to raise a very much larger quantity of really good beef than he does at present." [22] This was his major recommendation for meeting what he called "the invasion." He emphasized also the necessity of good feeding as well as good breeding in order to produce high quality meat.

It is interesting to note that he did not recommend a protective tariff to keep the foreign product from competing so vigorously with that of the British farmers. A statement in the *Scotsman* for May 2, 1877, which may or may not have been written by Macdonald, reads as follows:

> If the old Protectionist system had still been in vogue, this question would never have arisen; or, if it had, would have been disposed of by a prohibitory duty imposed on American meat at the instance of the landed and agricultural interest. But our farmers themselves would nowadays be the last to demand that the whole nation should be compelled to pay twice the market value for meat in order that they might carry on their business at a profit. Nobody has publicly expressed, or is likely to express, the least feeling of hostility to the new trade. All that can be done is to take the facts as they are, to make the best of them, and to endeavour to gauge their full effect on the future of British farming. It is admitted on all hands that Scotch or English beef, if it can meet the American commodity in the market on equal terms, will always hold its own; but a difference of 2d. to 3d. a lb. in the price in favour of the imported meat will give that the preference. Not, indeed, in all cases; what is known in the trade as "prime Scotch beef" will, in all likelihood, continue, through its sheer superiority, to retain the first place in the public favour, and to command a price as high, or nearly as high, as that at which it is at present quoted.[23]

It is significant that Macdonald's survey gave little attention to the livestock industry of Great Britain, but gave sole attention to the study of the conditions in the United States which had given rise to the problem the British farmers were having to meet.

ROYAL COMMISSIONS OF 1879 AND 1893

In 1879 and again in 1893 Royal Commissions[24] on agriculture were set up by command of Queen Victoria and assigned the task of

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[22] Macdonald, *Food From the Far West,* pp. 299–300.
[23] Macdonald, *Food From the Far West,* pp. xiii–xiv.
[24] The 1879 Commission was called the "Royal Commission on Agriculture, 1879," although it was sometimes referred to as the "Agricultural Interests Commission," and at other times it was called "The Duke of Richmond Commission." The 1893 Commission was called the "Royal Commission on Agriculture, 1893." Members of both Commissions were designated as "Her Majesty's Commissioners." Reports of the Commissioners and Assistant Commissioners are in the House of Commons, Sessional Papers, 1880, Vol. 18, [C.–2678]; 1881, Vol. 15, [C.–2778]; 1882, Vol. 14, [C.–3309]; 1897, Vol. 15, [C.–8540].

making surveys of agriculture at home and abroad for the purpose of "inquiring into" the depressed condition of agriculture. Special agents were sent to the various counties in the United Kingdom, to continental Europe, to Ireland, and to the United States. The results were not significant from the standpoint of removing the causes of the depression but bore some fruit in advancing the cause of better relations between landlord and tenant through national legislation providing for compensation to the tenant for unexhausted improvements.

COMMENTS ON BRITISH SURVEYS

The quality of the work done by Caird and by the Royal Commissions of 1879 and 1893 was better than average. Those surveys did not yield results comparable to the work of Young and Marshall because of the circumstances of the times. The work of Young and Marshall was done at a time when for 25 years there had been conditions favoring a new agriculture distinct from the old agriculture which had existed since Roman times. A few people had already demonstrated the profitableness of the new way of farming adjusted to the new demand for farm products. Studying their results and making their practices known to the other farmers of England was a significant service at that time. But no such service was rendered by the Royal Commissions of 1879 or of 1893. English agriculture was in the midst of a depression and had not yet found its way out. The earlier adjustments were made to meet the new demands of a market resulting from the growth of modern industry, and the latter motives in making readjustments were to avoid foreign competition. Furthermore, the problem was not a local one. The problem of the English farmer in the last quarter of the nineteenth century had its origin in England's relations to the outside world. This was well recognized by the editors of the *Scotsman*. James Macdonald's report was based on material from the right source and his recommendations were practical and followed by many farmers.

The development of transportation and refrigeration, the rapid expansion of agriculture, and the flow of large quantities of food into the British markets from abroad were the major causes of the agricultural depression in Great Britain in the last quarter of the nineteenth century. The solution of the problem lay in understanding the cause and, on the basis of the facts, deciding whether or not England was going to protect her farmers against outside competition or find some way of adjusting the agriculture to lines of production which were less in competition with foreign agriculture, for example, high grade beef and mutton, milk, fruits, and vegetables. In a measure, British agriculture was sacrificed in the interest of industry and commerce.

By the middle of the nineteenth century Great Britain was committed to the policy of the further development of her foreign trade. This trade was based upon the possibility of importing large quantities of food and raw materials from the newer countries of the world and paying for these goods in manufactured products. Under this policy Great Britain became more and more dependent upon the foreign supplies of agricultural products and upon the foreign markets for her growing surpluses of industrial products. The population of Great Britain increased and the level of living was enhanced. Even the farmers, once they had made the necessary readjustments, were able to maintain a high standard of living. The significant point to be made here is that in general the surveys of British agriculture made in the last quarter of the nineteenth century contributed but little toward helping the British farmer readjust to the new conditions created by the British industrial and commercial policy. But the farmer muddled through until the policy was changed in the twentieth century.

The Cobden campaign (by the end of the second quarter of the nineteenth century) had put England definitely on a free trade basis. This was completely in harmony with her interests as a great exporter of manufactured products, and Great Britain was not ready in the 1890's to abandon this free trade policy which was formulated in the interest of expanding her markets for the products of the industrial workers, even though it made serious problems for the British farmer.

These examples of the use of the survey method of fact-finding by the British as a basis of action on the part of farmers in adjusting their agriculture to the changing conditions of a dynamic world, and as a basis of action on the part of the government in the development of statesmanlike policies affecting agriculture in the national life, have been set forth as a background against which to present the development of the survey method of fact gathering in the United States.

Surveys in the United States Prior to 1908

The "look and see" method developed spontaneously in New England and in the old South. The influence of Arthur Young accounts for an agricultural survey initiated by George Washington in the states of Pennsylvania, Maryland, and Virginia. In the eighteenth and nineteenth centuries, Jared Eliot, George Washington, and Edmund Ruffin stand out prominently as men interested in the improvement of farming methods who used the survey method of fact-finding for agriculture. There were many others, foreigners as well as Americans, who travelled and wrote of agricultural conditions. Of these, F. L. Olmsted, Solon Robinson, and L. H. Bailey will be mentioned. Commencing with the year 1840, the federal census of

agriculture provides an over-all decennial survey of agriculture from which students may draw the background facts for the consideration of a great variety of subjects. After 1840, the records of the observation of travellers ceased to be as important as they were in the years prior to that date.

Two of the pioneers in agricultural economics who were teaching the subject in universities, but not at that time officially connected with, nor financed by, agricultural colleges, were Thomas N. Carver, of Harvard University, and Henry C. Taylor, of the University of Wisconsin. They did not use a formal schedule but used the observational form of the survey and the specific inquiry in their efforts to gather information supplementary to the census data as a basis of arriving at the principles of agricultural economics.

JARED ELIOT

The most important agricultural writer of his time, Jared Eliot, may be looked upon as the pioneer in agricultural surveys of the observational type in America. Like Arthur Young in his agricultural tour in the South of England, Eliot made his studies of New England agriculture while travelling on other business. His most notable writings are six *Essays Upon Field Husbandry in New England.* The first was published in 1748. In the preface to the first of these essays, Eliot said:

> Having spent more than Thirty Years in a Business that required a great deal of Travel, altho' it did not much hinder Reading and Study, gave me an opportunity to see much of the Country, of making many Observations, and of being acquainted with very many Persons of Worth and Ingenuity, both Farmers and Others.[25]

In addition to using the knowledge which he had picked up as the result of 30 years of riding through New England as a physician, Eliot made use of the writings of the ancient Romans and of the contemporary English writers on agriculture, especially Jethro Tull's *The New Horse-Hoeing Husbandry.*[26] He also called upon his contemporaries in New England to send such information to him as might be worth publication. In his first essay he wrote:

> There are few Men of Business, Ingenuity and Observation, but what have found out Things valuable and useful, but for Want of some proper Method to communicate them, they die with the Discoverers, and are lost to Mankind.
>
> Therefore whoever has made any observations or Discoveries, altho it be but a Hint, and Looks like a small Matter, yet if pursued and improved, may be of publick Service. If they see Cause to favour me with such Discoveries

[25] J. Eliot, "Essays Upon Field Husbandry in New England and Other Papers, 1748–1762," *Columbia University Studies in the History of American Agriculture,* ed. by H. J. Carman and R. G. Tugwell (New York: Columbia University Press, 1934), Vol. 1, p. 3.

[26] J. Tull, *The New Horse-Houghing Husbandry: or, An Essay on the Principles of Tillage and Vegetation* (London: A. Rhames, 1731). The title of this book is variously spelled – the 1731 edition being "Horse-Houghing," the 1733 edition "Horse-Hoing," and some later editions "Horse-Hoeing."

and Experiments as they have or shall Make, I shall Receive it with Thankfulness, and publish it either with or without their Names to it, as they shall see fit . . . .

A Discovery of the Nature and Property of Things, and applying them to useful Purposes, is *true Philosophy*: A great Deal of what has passed in the World for Learning, is Philosophy falsly so called . . . .

Experimental Philosophy being founded in Nature and Truth is obtain'd no way, but by Time and Diligence: The *Knowledge of Things Useful* are gained by little and little.

We are not to admire or despise Things meerly [*sic*] because they are new; but value Things or disregard them just so far as they are found (by *Experience* that faithful Instructor) to be useful or unprofitable. Wisdom is profitable to direct.[27]

Jared Eliot was a philosopher who desired to help in the development of the basic occupation of the people of New England. Having a vigorous mind, he utilized such sources of information as he could get: observational surveys, experiments, the collection of information through correspondence, the writings of those in older countries. Of the writings on agriculture of English origin, he wrote in his preface to the first essay:

There are sundry Books on *Husbandry* wrote in *England;* Having read all on that Subject I could obtain; yet such is the difference of Climate and method of Management between them and us, arising from Causes that must make them always differ, so that those Books are not very Useful to us. Besides this, the Terms of Art made use of are so unknown to us, that a great deal they Write is quite unintelligible to the generality of *New-England* Readers.

Altho' *Great-Britain* in its Situation be above six Hundred Miles more Northly than this Country, yet the Winters there are ordinarily so Mild, that their Books direct to Ploughing in Lays all the Winter Months; whereas at that Season we are commonly bound fast in Frost and Snow.

For these Reasons Books of *Husbandry* calculated to the State and Circumstances of the Country may be of great Service; not an *History* of our Practice, not an *Account* of what we do in our present Husbandry, but rather what we might do, to our *Advantage*.[28]

In speaking of Jared Eliot as an agricultural writer, Rodney True said:

That the essays in point of time were the first agricultural production printed in America is hardly to be asserted. When body and quantity of material are considered, Eliot stands out as our first great American agricultural investigator and writer. That his influence became great from Philadelphia northward is abundantly shown by letters seen in the Yale collection: to Eliot from Collinson and Richard Jackson in England; from Benjamin Franklin, John Bartram, and William Logan of Philadelphia; from Judge Peter Oliver of Middleborough, Massachusetts; from President Ezra Stiles of Yale College; and from James Monk of Halifax.[29]

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[27] J. Eliot, "Essays Upon Field Husbandry," pp. 23–24.
[28] J. Eliot, *Field Husbandry*, Preface, p. 3.
[29] R. H. True, "Jared Eliot, Minister, Physician, Farmer," *Columbia University Studies in the History of American Agriculture*, ed. by H. J. Carman and R. G. Tugwell (New York: Columbia University Press, 1934), Vol. 1, p.Iiii. Also in *Agricultural History* (October 1928), 2:185–212.

GEORGE WASHINGTON

As an agricultural surveyor as well as a land surveyor, George Washington was continually studying ways and means of improving the methods of cultivating his farms, four of which were operated by hired managers. The remainder of his land, consisting of some ten thousand acres, was leased for cash rental.

But the authors have found no evidence that Washington read the essays of Jared Eliot. Eliot's influence seems to have reached no farther south than Philadelphia, where he was in touch with Benjamin Franklin and others. Undoubtedly Washington was in closer contact with England than with New England. He was shipping his surplus products to England and buying many things from that country. He read Arthur Young's writings and carried on a correspondence with Young from 1786 to 1794. From October 20, 1792 to January 20, 1799, Washington had some correspondence with Sir John Sinclair who was President of the Board of Agriculture of which Arthur Young was the Secretary.

Young forwarded to George Washington many kinds of seeds and new types of farm implements, and sent him a barn plan, as well as letters and books. Since the new system of crop rotation was a perennial theme of Young's, it is interesting to note that Washington responded to his influence in that regard. Under the date of November 1, 1787, Washington wrote to Young:

> . . . but the system of husbandry which has been found so beneficial in England, and which must be greatly promoted by your valuable Annals, is now gaining ground; There are several (among which I may class myself) who are endeavouring to get into your regular and systematic course of cropping, as fast as the nature of the business will admit, so that I hope in the course of a few years, we shall make a more respectable figure as farmers, than we have hitherto done.[30]

Again on December 4, 1788, Washington wrote to Young, "I have been laying out my farm into fields of nearly the same dimensions, and assigning crops to each until the year 1795."[31] Regarding the plow that Young had sent and the barn plan, Washington wrote:

> Since I wrote to you formerly respecting the objection made by my labourers to the weight of the Ploughs; I have had sufficient experience to overcome the ill-founded prejudice, and find they answer the purpose exceedingly well . . . . The building of a Brick Barn has occupied much of my attention this Summer. It is constructed somewhat according to the plan you had the goodness to send me; but with some additions. It is now, I believe, the largest and most convenient one in this Country.[32]

As a result of a request by Young, Washington wrote the following letter to some of his friends in Virginia, Maryland, Pennsylvania, New York, and New Jersey, asking them to make surveys of agricul-

[30] George Washington, *The Writings of George Washington From the Original Manuscript Sources, 1745–1799*, ed by J. C. Fitzpatrick (Washington, 1939), Vol. 29, p. 298.
[31] Washington, *Writings*, Vol. 30, p. 152.
[32] Washington, *Writings*, Vol. 30, p. 152.

tural conditions in order to obtain information to be sent to Arthur Young.

Philadelphia, August 25, 1791.

DEAR SIR,

Some inquiries having been made of me by important Characters, on the state of agriculture in America, comprehending its several relations, and intended to ascertain the value of our lands, with their yield in the several kinds of grain, grass, etc. the prices of farming stock; the prices of produce, etc. together with a list of the taxes in the different States, which may in any way affect the farmer: as an object highly interesting to our country, I have determined to render the most just and satisfactory answers that the best information I can obtain from different parts of the United States will enable me to give.

With this view, my confidence in your disposition and knowledge, leads me to offer to your inquiry, and to request from your intelligence, as early information as may be convenient, on the following heads:

1. The fee-simple prices of farming lands in such parts of the State of _____ as are neither so near to large towns as to enhance their value, nor so distant from market as greatly to reduce it, or to make the situation inconvenient. In your answer to this inquiry, be pleased to note, generally, the situations, the soil, and if it be practicable, the proportions of arable, pasture, and wood-land.
2. The rents of the same lands, when leased, and, generally, the terms of lease.
3. The average product of the same lands in wheat, rye, barley, oats, buckwheat, beans, pease, potatoes, turnips, grasses, hemp, flax, etc. in the common mode of husbandry now practised.
4. The average prices of these articles, when sold at the farm, or carried to the nearest market.
5. The average prices of good working horses, working oxen, milch cows, sheep, hogs, poultry, etc.
6. The average price of beef, veal, mutton, pork, butter, and cheese, in the neighbourhood, or at the nearest market towns.
7. The price of wrought iron, whence the price of farming utensils may be inferred.
8. A list of the taxes laid in the State of _____.

The tendency of this inquiry, will be my apology for the trouble it may give to you.

I am, dear Sir, with great regard,

Your most obedient servant,
(Signed) G. Washington[33]

That letter was sent to Thomas Johnson of Frederick, Maryland, who was asked to describe the conditions in Montgomery, Frederick, and Washington counties; to Thomas Hartley of York, Pennsylvania, who described in his reply three districts in York County and four districts in Franklin County, Pennsylvania; to David Stuart in Virginia, who responded to the questions in the schedule for the

[33] George Washington, *Letters From His Excellency General Washington to Arthur Young, Esq. F.R.S.* (London: B. McMillen, 1801), pp. 32–33.

counties of Fairfax, Loudoun, Berkeley, Prince William, and Fauquier. We find no responses recorded as being received from New York and New Jersey.

We believe that survey, made by George Washington and his friends, was the first agricultural survey in the United States based upon specific questions addressed to competent persons who undertook to answer the questions for specific limited areas.

In a letter to Young, dated August 15, 1791, Washington commented on the material gathered for him:

> . . . with great pleasure I will forward, in a short time, such information with respect to the prices of Lands, Stock, Grain, amount of taxes &ca. &ca. as will enable you to form a pretty accurate idea of the present state and future prospects of this Country. In the meanwhile, I believe I may confidently add, that although our Agriculture, manufactures and commerce are progressing; although our taxes are light; although our laws are in a fair way of being administered well, and our liberties and properties secured on a solid basis by the general Government having acquired more and more consistency, strength and respectability as it moves on; yet, that no material change in the prices of the above articles has taken place, except in a few instances of Land, under peculiar advantages; nor is it probable there will be in the latter whilst there is such an immense territory back of us for the people to resort to.[34]

EDMUND RUFFIN

In speaking of agricultural surveys in the United States prior to 1860, L. C. Gray said:

> The example of the strictly agricultural surveys made in England aroused interest in similar projects in this country. As a result of agitation begun as early as 1835 the South Carolina legislature made provision in 1842 for an agricultural survey, and Edmund Ruffin was invited to take charge of it. Ruffin continued with the project about a year, during which the survey consisted in the collection of general descriptive information concerning agriculture in the various counties and the location and analysis of marl deposits. Later the project was continued for some years by Tuomey, essentially as a geological survey. In 1852 North Carolina made provision for an agricultural survey, which was entrusted to Dr. Ebenezer Emmons, who had carried on a similar project in New York State. In the same decade Alabama, Mississippi, and Arkansas developed geological and agricultural surveys. That of Mississippi was subsequently carried on by the well-known Eugene Hilgard.[35]

Edmund Ruffin was a farmer of unusual intelligence and forcefulness, who became intensely interested in improving the soil on his Virginia farm. He recognized the necessity of rotating crops and of introducing clover into the field system. In order to grow clover, which became a central feature in soil improvement, it was necessary to use "calcareous manures." Ruffin for this reason became a great user of marl and a great advocate of its use by others. This explains

[34] Washington, *Writings,* Vol. 31, p. 340.

[35] L. C. Gray, *History of Agriculture in the Southern United States to 1860* (Washington: Carnegie Institution of Washington, 1933), Vol. 2, p. 790. Gray's footnote references to other discussions of this statement are omitted from this quotation.

why his report on the agricultural survey of South Carolina for 1843 dealt so largely with the location of the marl beds of that state. In his letter to Governor James H. Hammond, transmitting that report, Ruffin wrote:

> Before accepting the charge and conduct of the Agricultural Survey, with which I had been so unexpectedly and highly honored by your appointment, and in my first correspondence thereupon with your Excellency, I stated the reasons which made it expedient for me, if serving at all, to select from the very wide and diversified field of important subjects required to be investigated, and to confine my labors at first, and mainly, to the one department in which I counted upon rendering the most early and important services to the improvement of the soil and agriculture of South Carolina. This selected object was the investigation of the extensive but heretofore neglected beds of marl and of lime-stone, and other rich resources of calcareous manures, in the upper as well as in the lower country; and it has been my aim, while ascertaining and making known their existence, extent and great value, also by personal conference with, and verbal instruction to the proprietors and others interested, to urge and induce their speedy and proper commencement of applying these manures . . . .
>
> But though my attention and labors were mainly, they were not exclusively devoted to the calcareous deposits. My observations of agricultural facts on other subjects have been numerous. . . . Such information . . . has been made use of in verbal and personal communication as opportunities offered. A few only of the most important and general subjects will be presented, as parts of this report.
>
> But though it was impossible for me, by my own direct labors, to supply all that would be wanting for a general Survey and Report, I aimed, and made an early effort to do so indirectly, by enlisting the aid of the many Agricultural Societies of the State. A request to this end was addressed to them, through the President of the State Agricultural Society . . . .[36]

The survey schedule which Ruffin prepared, and which was sent to agricultural societies and to individuals by the president of the State Agricultural Society, is comprehensive. It would be interesting to know how much Ruffin was influenced in making this schedule by the writings of William Marshall. The schedule:

General Head

I. Geographical character of the particular Agricultural District or section of country under consideration.
   1. Situation and extent, and natural divisions.
   2. Climate, and especially any peculiarities thereof, and the causes.
   3. Surface and face of the country.
   4. Minerals, especially such as may be valuable for agricultural or economical uses.
   5. Water, in reference to uses of navigation, propelling machinery, irrigation, etc.

II. General description and management of land.
   1. Quantities of arable land, of meadow, of wood, of swamp or marsh, and of other waste lands.

[36] E. Ruffin, *Report of the Commencement and Progress of the Agricultural Survey of South Carolina for 1843* (Columbia, 1843), pp. 3–4.

2. Soils and subsoils, and the actual productive value of lands in reference thereto.
3. Sizes of farms or plantations.
4. The usual crops, both of large and small culture, and rates of product.
5. Rotations or succession of crops.
6. Application of manures—kinds and quantities used.
7. Depth and manner of ploughing, (or of hoeing instead) and preparation for, and tillage and general management of each of the several kinds of crops.
8. Expenses of cultivation.
9. Foreign grain and hay purchased, and the general total cost.

III. General market prices of lands, past and present, and rate of rents—and products in usual crops compared to these prices.

IV. Drainage and Embankments.

1. Of tide marshes and tide swamps.
2. Of swamp lands, of level higher than the tide.
3. Of arable, or other firm land of low level or flat surface.

V. Implements and Machines for Agricultural Operations.

VI. Fencing and Enclosing.

VII. Grass husbandry and Grazing.

1. Natural meadows on moist ground.
2. Artificial (or sown) grasses on permanent meadow.
3. Artificial grasses, peas or any other green crops for stock food or for manure, alternated with tillage crops on arable land.
4. Mowing and hay.

VIII. Live Stock.

1. Teams or animals for labor.
2. Animals reared and fattened for food or sale, and their management.
3. Animals purchased from abroad, and general cost thereof.

IX. Dairy Management.

1. Products, used or sold.
2. Supplies of butter obtained from abroad.

X. Manures.

1. Sources and supplies of manures of all kinds.
2. Preparation and application of stable and yard manures, and composts, the quantity and effects.
3. Marsh or swamp mud as manure.

XI. Orchards, Vineyards, and Fruits.

XII. Wood Land.

1. General description of the growth on different soils.
2. Uses made and value of timber and other products.
3. Quantity of land necessary to be kept in wood for farm purposes.
4. Disadvantages of excess of wood land to agriculture.

XIII. Waste Lands.

1. Tide marshes.
2. Unreclaimed swamps.
3. Sterile sands, or such as are so loose as to be liable to be moved by the winds.
4. Land of rocky or precipitous surface.

XIV. New or recently introduced and valuable processes, or improved practice in Agriculture.
1. Marling, and extent of applications before 1843, and subsequently.
2. Limeing or any other calcareous applications before 1843, and subsequently.
3. Clover.

XV. Notices and suggestions of any new resources for fertilization, or for agricultural improvement or profit.

XVI. Obstacles to agricultural improvement and profit.
1. Obstacles imposed by natural and unavoidable circumstances.
2. Obstacles caused by erroneous governmental policy, or by want of proper legislation.
3. Obstacles caused by individual action.

XVII. Diseases of residents caused by climate and condition of the country.
1. Local sources of malaria, their extent and operation and comparative malignity—as rapid streams sometimes overflowing their borders—tide water marshes, fresh or salt—swamps, whether in their natural state or under culture—mill-ponds—and the passage of transient and irregular floods of fresh water over salt marshes.
2. Increase or decrease of extent and virulence of malarious diseases in past time, and the supposed causes of either.
3. Means of diminution of such diseases within the reach of the separate action of individual proprietors—such as require combined action, and such as require legislative direction.

XVIII. Miscellaneous observations and statements on any thing conducive to the improvement of agriculture, not embraced under any of the foregoing heads.[37]

This questionnaire yielded meager results, but the schedule itself is a part of the history of the survey method.

FREDERICK LAW OLMSTED

In the years 1853–1854 Frederick Law Olmsted made extensive tours through the seaboard slave states, in Texas, and in the back country lying between Richmond, Virginia, and New Orleans, Louisiana. It is a matter of some interest that Olmsted toured England on foot in 1850–51 and published two small volumes covering his observations,[38] and yet made no mention of meeting James Caird who, in those years, was conducting a survey of English agriculture for *The Times* (London).

Olmsted's major interest appeared to be the effect of slavery upon the land and the people. Here and there, however, he described the agriculture on specific plantations and under given conditions, giving special attention to the exhaustion of the soil, which was the characteristic problem of the Coastal Plain from Maryland to Mississippi at that time. Some attention was given to the system of crop rotation and to Edmund Ruffin's efforts to rebuild the soil of Virginia.

[37] Ruffin, *Agricultural Survey of South Carolina*, Appendix, pp. 2–4.
[38] F. L. Olmsted, *Walks and Talks of an American Farmer in England*, 2 vols. (New York: George P. Putnam, 1852).

Olmsted dealt more with the differences in ideology of the North and the South than he did with the agriculture of the South, and the work has more value as a source book for the student of the problem of slavery than the problems of agriculture as such.

The following quotation describes the way in which Olmsted's books on the South were written:

> In 1852, his brother's delicate health suggested the desirability of a warmer climate and he began seriously to consider moving to Virginia. While he was contemplating a visit to Virginia for the selection of a farm for his brother, Mr. Raymond of the New York *Times,* struck by the qualities shown in his book on England, proposed to him to make a tour in the South and write a series of letters to the *Times* upon the economic and social conditions of the Slave States. He at once fell in with the idea, and on December 11, 1852, he started on his first trip. He returned April 6, 1853, having gone as far as New Orleans. It was the letters written to the *Times* while on this trip that formed the principal material for the *Seaboard Slave States,* published in 1856.
>
> On November 10, 1853, again as correspondent of the *Times,* he started in company with his brother John, on a second trip, which extended to the Mexican boundary. In returning, he parted from his brother at New Orleans and travelled on horseback from there to Richmond, reaching home in the summer of 1854. The letters he wrote during the first part of this trip were compiled and edited by his brother and published in 1857 under the title of *The Texas Journey,* while the material gathered by him on the return journey, alone, forms the major part of *The Back Country,* published in 1860.
>
> A hasty condensation of the three books was published in 1861, at the outbreak of the war, in London and New York, under the title of *The Cotton Kingdom.*[39]

SOLON ROBINSON

A Connecticut Yankee, Solon Robinson, went west and pioneered in agriculture and rural life.[40] Indiana was the state from which he radiated from 1830 to 1852. From 1852 to 1868 Robinson made his headquarters in New York City and held an editorial position with the New York *Tribune.*

Solon Robinson has been called the Arthur Young of America. There is some ground for this general description of Robinson. Between 1841 and 1851 he travelled all over the then settled areas of the United States.[41] He wrote freely of whatever he saw in country and city. He visited farmers, particularly the "gentlemen" farmers — professional men, lawyers, doctors, and others — who owned and operated farms. His agricultural writings were printed widely by the agricultural press — the *Cultivator,* the *American Agriculturist,* the *Prairie Farmer,* the *Weekly National Intelligencer,* and many

[39] F. L. Olmsted, Jr., "Biographical Sketch of Frederick Law Olmsted" bound with F. L. Olmsted, *A Journey in the Seaboard Slave States in the Years 1853–1854, With Remarks on Their Economy* (New York and London: G. P. Putnam's Sons, 1904), Vol. 1, p. xiv. (Originally issued in 1856.)

[40] A good source of information concerning Solon Robinson is: Herbert Anthony Kellar (ed.), *Solon Robinson, Pioneer and Agriculturist: Selected Writings,* 2 vols. (Indianapolis: Indiana Historical Bureau, 1936).

[41] Kellar, *Solon Robinson,* Vol. 1, p. 28.

others. In this regard he differed from Young, who published his writings in books. In yet another respect Robinson and Young were much alike. They described what they saw — it might be of only temporary significance, like the drouth of a given year and its effect on yields, or it might be of permanent historical value. Robinson travelled much in the South and made friends everywhere. He studied slave labor but was careful to raise no ethical issue, rather pointing out the well-being of slaves on well-managed plantations in comparison with the condition of factory workers in England. Young was the evangelist of the "new agriculture." Robinson was enthusiastic about the then new West — Indiana and Illinois — but he was hardly an evangelist. He warned people of the East of the hardships of pioneer life. His articles were intended to encourage certain types of families to go West and other types to stay in the East.

THE CENSUS AS A SURVEY

Many other casual surveys were made from time to time, but after 1840 the material gathered in that way had less significance because of the systematized and comprehensive survey by the federal census.[42] The census of agriculture may be looked upon as a farm survey which provides the basic material for the study of farm management, farm finance, and land tenure in the United States historically, geographically, and analytically. Its materials provide the background for the annual estimates made by the U. S. Department of Agriculture. The census of 1840 supplied statistics of crops and livestock by counties and provided the basis, when supplemented by materials in the agricultural journals of the time, for describing the type of farming throughout the settled areas of the United States. Those reports are available, decade by decade, through 1920, and every five years beginning with 1925. They show not only the type of farming of given dates, but, when compared, show the shifts and expansions in crop and livestock production.

The way in which census material has been used in studying questions relating to the economics of farm management has received attention in the section dealing with the historical and geographical approach in the study of agricultural economics.

EARLY SURVEY WORK BY L. H. BAILEY

"Bailey was one of the first men connected with experiment stations to see opportunities in field studies, possibly because of his field work under the great botanist, Asa Gray."[43] Soon after Bailey became Professor of Horticulture at Cornell University in 1888, he commenced making studies of the horticultural interests of western

[42] See also pp. 258–76.

[43] G. F. Warren, "The Origin and Development of Farm Economics in the United States," *Journal of Farm Economics*, 14:4 (January 1932).

New York. In 1890 he published a bulletin entitled, "Report Upon the Condition of Fruit-Growing in Western New York." This is the first of L. H. Bailey's surveys. In it attention is confined almost wholly to horticultural matters, such as plant diseases, insect pests, and the conditions of the apple, pear, quince, peach, small fruit and grape crops. But there was one suggestion for group action. At the end of the bulletin, he said, ". . . we urge upon fruit growers the importance of considering the advisability of endeavoring to secure a state law looking towards the control of contagious plant diseases."[44]

In January 1896 Bailey published another bulletin in which he gave this description:

> . . . we have undertaken . . . the investigation of the conditions of certain horticultural interests in western New York. In the interest of these particular inquiries, we have traveled no less than 25,000 miles in western New York and have visited and examined many hundreds, if not thousands, of plantations. We have attempted in these investigations to learn the actual state of the industries and to suggest means for their improvement. They are really the beginning of a horticultural survey which can be much extended with great profit . . . .
>
> At the present time, every intelligent farmer is an experimenter. We are in a transition period as respects the methods and objects of farming. But the greater part of all this experiment is lost unless it is carefully studied and collated by a specialist, and the summary results of it given to the world. Much of this cumulative body of experience of the best farmers is capable of yielding better results than similar work which might be undertaken at an experiment station. In fact, there are many lines of investigation touching rural economy, or farm management, which can be undertaken in no other way than by a study of actual farm conditions. An experiment station, which is necessarily constituted for scientific research, cannot touch many of the most vital problems of farming. The only ideal station is that which adds the farm of every one of its constituents to its own resources.[45]

Eleven months later Bailey published another bulletin in which he said:

> . . . By reason of their inherent conservatism, the agricultural people have not yet adjusted themselves to the recent social and economic movements, and they have not fully assimilated the knowledge and impulses of the time; and I am also convinced that grave errors have been committed in forcing the development of western lands. If these general conclusions are sound, then it follows that the solution of our agrarian difficulties is to be sought in better education . . . . There is already enough popular knowledge of better agricultural methods to greatly improve our rural conditions, if only the farmers would assimilate it and apply it. This knowledge is of little account when it is a mere extraneous possession. It must be worked into the fibre of the man until he is not aware that he possesses it.
>
> In this extension work, therefore, we have sought not so much for new facts as for some way of driving home the old facts. We have tried to set forces at work which would silently extend themselves when we had left them . . . .

[44] L. H. Bailey, "Report Upon the Condition of Fruit-Growing in Western New York," Cornell Agr. Exp. Sta. *Bulletin* 19 (Ithaca, 1890), p. 58.

[45] L. H. Bailey, "Extension Work in Horticulture," Cornell Agr. Exp. Sta. *Bulletin* 110 (Ithaca, 1896), pp. 129–30. (Cf. footnote 72 on *infra*, p. 359.)

I must hasten to say that the agricultural status in western New York is not such a deplorable one as my reader may suppose. . . . Those farmers who grow various and difficult crops are wide awake, intelligent, aggressive and for the most part contented. The man who grows only a few and staple crops is very apt to fall into stereotyped ways of thinking, which may mean that he drops behind the times. Just as fast as more varied farming is forced upon the agricultural communities by the inexorable struggle for existence, will the farmer's horizon and sympathies enlarge; and with the progress of this broadening and educative impulse—which now, fortunately, is rapidly rising—the farmers will find themselves in position to correct whatever minor faults of legislation that may have occurred, and to direct and control the social forces with which they are concerned.[46]

These quotations suggest that between 1890 and 1897 Bailey's survey ideas had expanded from a strictly horticultural outlook to an outlook upon the whole of agriculture and was giving him a large overview and insight which was preparing him for the position of leadership in agricultural research and education which was realized when he became Dean of the College of Agriculture at Cornell University in 1903.

In promoting the agricultural survey, Dr. Bailey desired to revive and improve that which he looked upon as a venerable method of research which had been neglected by the agricultural colleges in those days of rapid development of laboratory and experimental methods of research relating primarily, of course, to the subject matter of the physical and biological sciences. In a section on "Scope and Work of Colleges of Agriculture" in his *Cyclopedia of American Agriculture,* Bailey said:

From the earliest days of activity in agricultural betterment, surveys or censuses of conditions in rural communities have been prominent . . . . These early efforts are not enough considered by the present workers. There is now a recrudescence of the idea modified by the more exact inquiries that we are able to make at the present day.[47]

Bailey was himself the outstanding leader in that recrudescence. In 1908 he elaborated his conception of the subject matter which should be included in agricultural surveys:

A thorough-going study of the exact agricultural status of every state should now be made, and it should be made by the state itself, working through an agricultural college. Such an inquiry made carefully and without haste by men who are thoroughly well prepared, and continuing over a series of years, would give us the data for all future work with local problems. We must have the geographical facts. We are now lacking them. We talk largely at random. We must discover the factors that determine the production of crops and animals in the localities, and the conditions that underlie and control the farm life. Consideration of these conditions involves study of local climate; knowledge of the kinds, classification and distribution of the soils

[46] L. H. Bailey, "Second Report Upon Extension Work in Horticulture," Cornell Agr. Exp. Sta. *Bulletin* 122 (Ithaca, 1896), pp. 471–73.

[47] L. H. Bailey, "Education by Means of Agriculture," *Cyclopedia of American Agriculture,* ed. by L. H. Bailey (New York: The Macmillan Company, 1909), Vol. 4, p. 453.

and the relation of place and altitude to production of crops and live-stock; determination of the best drainage practices on various soil types; consideration of the cultural experience and manurial needs as adapted to the types; inquiry into the practice with all leading crops and products of the localities; study of the possibilities of farm water-power; collation of community experience. Such a study of a state should be broad and general enough to consider the status of all the agricultural industries in the state, and it should also take full cognizance of educational and social conditions.

This constitutes the greatest need of practical farming at the present day. The agricultural institutions are working out the principles, but they may not be able to apply these principles to individual farms because they do not know the exact local conditions. The farmer himself may not know the principles, nor even the local facts. The result is a lack of articulation between the teaching and the practice. Farming is founded on the facts of the locality: no business can hope for the best success until it has exact knowledge of its underlying conditions.

These kinds of inquiries are now well under way in the form of "surveys" of many kinds, proceeding from the colleges of agriculture and the United States Department of Agriculture. The studies of larger range, that purpose to compare general agricultural conditions in the whole national domain and to standardize our knowledge of them, may well be undertaken directly by the national government; but the commonwealth itself should give itself the advantage of making inquiries into its own agricultural conditions. The survey work of the institutions will be greatly perfected in the next few years, and we may expect to see great public funds devoted to it. The survey parties will comprise strong, all-round men. No small part of the value of such surveys will be the discovery of great numbers of earnest, competent men and women on the farms who may be made local leaders, and the recognition that it will give to good agricultural practice everywhere. Every thorough survey should be the forerunner of new ideals for the communities, and of new points of crystallization of local effort. It should make new paths.[48]

In a lecture before the training conference of rural leaders at Cornell University in 1911, Dr. Bailey took as his subject "The Survey-Idea in Country-Life Work." He said,

The scientific method is *first to determine the exact facts, and then to found the line of action on these facts.* This is the way in which all problems must be attacked if real and permanent solutions are to be found . . . . We must finally found all our progress in rural life on a close study of the facts and the real elements in the situation, in order that we may know exactly what we are talking about . . . .

A movement to collect such facts is now just beginning to appear. It is generally spoken of as "agricultural surveys."[49]

TAYLOR'S TOURS AND SURVEYS

The survey method was used by H. C. Taylor as a means of supplementing the historical and statistical studies he was making on farm management and land tenure in Europe and in the United States during the years from 1899 to 1907.

In August and September 1899 he made a bicycle tour of Great

[48] L. H. Bailey, *The State and the Farmer* (New York: The Macmillan Company, 1908), pp. 81–84.

[49] L. H. Bailey, "The Survey-Idea in Country-Life Work," *York State Rural Problems* (Albany: J. B. Lyon Company, 1913), Vol. 1, p. 239.

Britain and Ireland, the descriptive notes of which were written on the spot or in the evening of each day. That tour lasted 50 days. Tenant farmers, landowning farmers, and the estate agents of the great landlords were visited with a view to getting as clear a picture as possible of the way in which farms were operated, and particularly the way in which farms were leased. He sought the views of farmers and landlords with regard to the rotation of crops and the various methods of renting land, and particularly with regard to the effectiveness of the Agricultural Holdings Act of 1883 in giving security to the tenant farmers for their investments in and upon the land.

After 50 days in the field he went to London and carried on research in the library of the British Museum and in the library of the Royal Agricultural Society of England, seeking the necessary materials with which to construct the story of the decline of landowning farmers and the development of the system of tenant farming in England and Scotland. In his search he started with the conditions that existed in 1899 and worked backward toward the earlier periods. But the story was written chronologically, commencing with the estimates of Gregory King[50] for the year 1688, when more than half of the farmers owned the land they tilled, and, working toward 1899, seeking to describe the conditions and forces which resulted in the decline in numbers until there were but a scattering few landowning farmers left in the United Kingdom.

The results of that study, so far as they have been published, are found in "The Decline of Landowning Farmers in England," published in June 1904.[51] Other materials obtained at the same time, relating primarily to the relation between landlords and tenants in England, were published in 1905 in *Agricultural Economics*.[52]

Also in the years 1906 and 1907 Taylor made tours in the United States for the purpose of gathering information directly from farmers and landlords relating to land tenure.

THOMAS NIXON CARVER

In the summer of 1903 Thomas Nixon Carver made a thousand-mile agricultural tour of the Corn Belt on horseback. Some of the results of that tour were printed in articles entitled, "The Corn-Growers" and "Life in the Corn Belt" in the *World's Work* for November and December 1903.[53] While those articles were written in a popular style, they contain a number of significant statements regarding the agriculture and the life of the people both on the farms and in the small towns in the Corn Belt.

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[50] Gregory King, *Natural and Political Observations and Conclusions Upon the State and Conditions of England, 1696,* Sec. VI, annexed (pp. 406–49) to G. Chalmers, *An Estimate of the Comparative Strength of Great Britain, London, 1802,* (London: J. Stockdale, 1802).

[51] H. C. Taylor, "The Decline of Landowning Farmers in England," University of Wisconsin, *Bulletin* 96, Economics and Political Science Series, 1(1):1–66 (Madison, 1904).

[52] H. C. Taylor, *An Introduction to the Study of Agricultural Economics* (New York: The Macmillan Company, 1905), pp. 286–327.

[53] T. N. Carver, "The Corn Growers," *World's Work,* 7:4127–37 (November 1903); "Life in the Corn Belt," *World's Work,* 7:4232–42 (December 1903).

Carver observed the way in which enterprises are combined on the farm in such a manner as to provide continuous employment throughout the year, and the way in which the different enterprises are selected with a view to their dovetailing together in a continuous program rather than in conflict with each other and thus developing peak loads beyond what the available labor force could handle. His treatment of the subject of thrift and the standard of living of rural people, and particularly his view that the way in which the new immigrants tended to lower the living standards and drive land values to high levels, which the original American farmers with the higher living standards could not afford to pay, is reminiscent of the conversation of native farmers of that time, and will not be accepted by the careful student without additional evidence. Carver praised rural telephones for what they were bringing into the life of rural people and reproduced in his article on "Life in the Corn Belt" a telephone conversation on a party line in which four women had a neighborly visit.

In the summer of 1904 Carver made a five hundred mile horseback tour through Massachusetts, New Hampshire, Vermont, and Connecticut. An article giving the findings of that trip was published in the *World's Work*.[54] Carver discussed the importance of part-time farming in the hills of New England where the woodworking industries and the keeping of summer boarders go far toward providing cash income for the residents of small farms. He recommended that the rough country of New England be converted into sheep pastures and grazing grounds for cattle to be purchased in the spring and sold in the autumn. New England, particularly Vermont, had been much more of a sheep country in 1840 than it was in 1900, and by 1900 the dairy industry had in a large measure replaced the sheep industry. Since the time of Carver's tour the dairy industry has become more and more the center of agricultural interests in New England. The study of available statistics and other historical data showing the trends in New England agriculture would have been a valuable background for interpreting what Carver observed while on his tour. It remains true that the small farmers along the Green Mountains in Vermont, from the Massachusetts line to the Canadian border, find the woodworking industry and the keeping of summer boarders, along with a limited amount of farming, the sources of a satisfactory income. This mixed economy, or "part-time farming," makes a far better use of the hill country than throwing it into large grazing areas with a greatly reduced population.

Carver's sabbatical year, 1906–07, was spent in Europe. He travelled through rural France mainly, but also through parts of Switzerland, Germany, Belgium, and Holland. On his bicycle he

[54] T. N. Carver, "What Awaits Rural New England," *World's Work*, 9:5748–52 (January 1905).

covered about four thousand miles, almost entirely in the rural districts, to see what he could find out about rural conditions in those countries.[55] Carver's observational travels were much more like the tours of Arthur Young than the surveys of William Marshall and partook of none of the detailed character of the surveys developed at Cornell University by G. F. Warren, but they gave emphasis to important phases of the rural economy which are rarely brought into focus in the more intensive statistical surveys. They were doubtless useful to Carver in preparing his lectures on agricultural economics. Carver, himself, says of his surveys, "I read Arthur Young and decided there was something of value in Arthur Young's methods. . . . I could not put down in a statistical table what I learned, but I believe it made my teaching more interesting."[56]

BAILEY AND THE COUNTRY LIFE COMMISSION

Liberty Hyde Bailey had for 20 years been making surveys of the horticulture and agriculture of the state of New York when he was called by Theodore Roosevelt, in 1908, to organize the Country Life Commission. In the leadership of that Commission Bailey availed himself of the opportunity to make a comprehensive rural survey of the nation as a whole.[57]

The Commission sent out a questionnaire to a half million people and received 115,000 replies. The following "circular of questions" was sent out "As a means of securing the opinions of the people themselves on some of the main aspects of country life. . . ."

Are the farm homes in your neighborhood as good as they should be under existing conditions?

Are the schools in your neighborhood training boys and girls satisfactorily for life on the farm?

Do the farmers in your neighborhood get the returns they reasonably should from the sale of their products?

Do the farmers in your neighborhood receive from the railroads, highroads, trolley lines, etc., the services they reasonably should have?

Do the farmers in your neighborhood receive from the United States postal service, rural telephones, etc., the service they reasonably should expect?

Are the farmers and their wives in your neighborhood satisfactorily organized to promote their mutual buying and selling interest?

Are the renters of farms in your neighborhood making a satisfactory living?

Is the supply of farm labor in your neighborhood satisfactory?

Are the conditions surrounding hired labor on the farms in your neighborhood satisfactory to the hired man?

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[55] From "Autobiography of Thomas Nixon Carver," unpublished manuscript of 11 pages, in H. C. Taylor Archives. That manuscript was given to Anne Dewees by Carver in 1941, with the statement that he "wrote it a number of years ago."

[56] Interview with T. N. Carver by Anne Dewees, Santa Monica, California, Feb. 3 and 4, 1941. Transcript of interview filed in H. C. Taylor Archives.

[57] "Report of the Country Life Commission," 60th Congress, 2nd Session, 1908–1909, *Senate Document* 705 (Washington, 1909). List of members: Liberty Hyde Bailey, Henry Wallace, Kenyon L. Butterfield, Walter H. Page, Gifford Pinchot, Charles Simon Barrett, and William A. Beard.

Have the farmers in your neighborhood satisfactory facilities for doing their business in banking, credit, insurance, etc.?

Are the sanitary conditions of farms in your neighborhood satisfactory?

Do the farmers and their wives and families in your neighborhood get together for mutual improvement, entertainment, and social intercourse as much as they should?

What, in your judgment, is the most important single thing to be done for the general betterment of country life?

[*Author's Note*: Following each question are the subquestions: (a) Why? (b) What suggestions have you to make?]

. . . In addition to the replies to the circulars, great numbers of letters and carefully written statements have been received, making altogether an invaluable body of information, opinion, and suggestion.

Hearings were held at 30 places by the whole commission, or part of it, between November 9 and December 22, 1908; and frequently two or more long sessions were held. Very full notes were taken of the proceedings. They were attended by good audiences, in some instances overflowing the hall. At several, especially in the Northwest, delegates were in attendance representing associations and communities in the vicinity, who were anxious to present their views and needs. Speeches were numerous and usually short and pithy, and represented every sort of person concerned with rural life, including many women, who contributed much to the domestic and educational aspects of the subject. The governors and principal officials of the States were often present; and also the presidents and professors of institutions of learning, clergymen, physicians, librarians, and others, but the bulk of the speakers and audiences was country people. No attempt was made to follow a definite programme of questioning, but general discussions proceeded, with an occasional show of hands or outburst of applause to signify general assent to the speaker's words.[58]

The report of the Commission, based upon that comprehensive survey of facts and opinions, contains many specific suggestions and recommendations. Most of these have been taken seriously and many of them were soon acted upon, while others have only recently caught the imagination of the people.

Some of the remedies lie with the National Government, some of them with the States and communities in their corporate capacities, some with voluntary organizations, and some with individuals acting alone. From the great number of suggestions that have been made, covering every phase of country life, the commission now enumerates those that seem to be most fundamental or most needed at the present time.

Congress can remove some of the handicaps of the farmer, and it can also set some kinds of work in motion, such as:

The encouragement of a system of thoroughgoing surveys of all agricultural regions in order to take stock and to collect local fact, with the idea of providing a basis on which to develop a scientifically and economically sound country life;

The encouragement of a system of extension work of rural communities through all the land-grant colleges with the people at their homes and on their farms;

A thoroughgoing investigation by experts of the middleman system of

[58] "Report of the Country Life Commission," pp. 26–27.

handling farm products, coupled with a general inquiry into the farmer's disadvantages in respect to taxation, transportation rates, cooperative organizations and credit, and the general business system;

An inquiry into the control and use of the streams of the United States with the object of protecting the people in their ownership and of saving to agricultural uses much benefits as should be reserved for these purposes;

The establishing of a highway engineering service, or equivalent organization, to be at the call of the States in working out effective and economical highway systems;

The establishing of a system of parcels posts and postal savings banks;

And providing some means or agency for the guidance of public opinion toward the development of a real rural society that shall rest directly on the land.

Other remedies recommended for consideration by Congress are:

The enlargement of the United States Bureau of Education, to enable it to stimulate and coordinate the educational work to the nation;

Careful attention to the farmers' interests in legislation on the tariff, on regulation of railroads, control or regulation of corporations and of speculation, legislation in respect to rivers, forests, and the utilization of swamp lands;

Increasing the powers of the Federal Government in respect to the supervision and control of the public health;

Providing such regulations as will enable the States that do not permit the sale of liquors to protect themselves from traffic from adjoining States.

In setting all these forces in motion, the cooperation of the States will be necessary; and in many cases definite state laws may greatly aid the work.

Remedies of a more general nature are: A broad campaign of publicity, that must be undertaken until all the people are informed on the whole subject of rural life, and until there is an awakened appreciation of the necessity of giving this phase of our national development as much attention as has been given to other phases or interests; a quickened sense of responsibility in all country people, to the community and to the State, in the conserving of soil fertility, and in the necessity for diversifying farming in order to conserve this fertility and to develop a better rural society, and also in the better safe guarding of the strength and happiness of the farm women; a more widespread conviction of the necessity for organization, not only for economic but for social purposes, this organization to be more or less cooperative, so that all the people may share equally in the benefits and have voice in the essential affairs of the community; a realization on the part of the farmer that he has a distinct natural responsibility toward the laborer in providing him with good living facilities and in helping him in every way to be a man among men; and a realization on the part of all the people of the obligation to protect and develop the natural scenery and attractiveness of the open country.[59]

The Commission placed special emphasis upon the first two of these suggestions — the making of surveys of agriculture and country life, and the creation of a system of extension work. Both of those suggestions were soon followed on a comprehensive scale, and the parcel post and movement for good roads followed quickly. The recommendations relating to rural sanitation and health have only recently found a vigorous following.

[59] "Report of the Country Life Commission," pp. 15–16.

The Cornell Type of Farm Management Survey

Cornell University took the lead in the United States in developing a new form of the survey method of gathering data relating to agriculture. Liberty Hyde Bailey drew T. F. Hunt and George F. Warren into the survey work. Hunt started the Tompkins County survey, and Warren manifested real genius in testing out and developing the farm management survey in the statistical form which soon came to be generally accepted in the United States as a pattern for agricultural fact gathering in the study of farm management.

THOMAS F. HUNT AT CORNELL

L. H. Bailey called Thomas F. Hunt to Cornell University as Professor of Agronomy in 1903. Of that appointment Bailey said:

> I brought T. F. Hunt to Cornell. I had seen his work in Ohio and had heard him lecture. We wanted a good agronomist which I knew him to be, and I was particularly attracted by his philosophy of rural life and it was this that led me to choose him.[60]

Before Hunt went to Cornell in the summer of 1903 as Professor of Agronomy, G. N. Lauman had pre-empted the field of agricultural history in that institution. Lauman was also offering a course in "rural economy" which did not include the economics of farm management.[61] "The Department of Agronomy as then organized [1904] included, besides agronomy in its present meaning, the subjects of plant-breeding, farm management, and farm mechanics."[62] Hunt introduced at Cornell, under the title "Farm Management," his Ohio course in Rural Economics. He continued to emphasize the importance of case studies. He required each student to present the facts relating to the assets, the income, and the expenditures on a specific farm and to calculate the labor income of the farmer.[63] Hunt outlined that study for the Cornell students as follows:

A. Give an outline of the plan of management, including the rotation of crops, the total area in each crop, yield per acre and total production of

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[60] Letter from L. H. Bailey to H. C. Taylor, Aug. 27, 1945.

[61] In interviews by Anne Dewees at Cornell University, Nov. 14 and 18, 1939, Lauman said, "Hunt's rural economics was really farm management. Hunt was the first man to really teach farm management at Cornell. . . . Before Hunt came there was a good deal of the ordinary farm problems involved in my course in Rural Economics."

[62] Cornell Agr. Exp. Sta., *Annual Report,* 1937, p. 97.

[63] See T. F. Hunt, *How To Choose a Farm* (New York: The Macmillan Company, 1906), pp. 111–27. The character of Hunt's work in the field of agricultural economics while at Ohio is indicated by the content of his *Lectures on the History of Agriculture and Rural Economics* as printed by his students in 1899. In that book 121 pages are devoted to the history of agriculture and 23 pages to rural economics. The character of Hunt's course in Farm Management (Agronomy 12) at Cornell is indicated by the catalog description for the three years, 1904–05, 1905–06, and 1906–07, which reads as follows: "Agronomy 12. Farm Management. Lectures and recitations on present agricultural methods in various countries; cost and relative profit of various farm operations and systems." The character of this course is also indicated, in part at least, by the content of his book entitled *How To Choose a Farm,* which was published in 1906. In that book the character of the problem assigned to his students in Farm Management is indicated in detail on pp. 111–27. Receipts and expenditures, inventories at the beginning and at the end of the year, etc., are made the basis of calculating "farm income" and "labor income."

each crop. State the character of animal products that it is expected to sell, and state the yield that it is expected may be obtained, as the butter-fat per cow, wool per sheep, eggs per hen, etc. It is expected that, under this head, an intelligent idea of the system of management will be given.

B. Give an inventory of the property at the beginning of the year, classified under the three heads of plant, materials and supplies. In these inventories include such materials and supplies as may be necessary to putting in the crops and carrying the stock until materials and supplies have been raised, except in so far as current income may be available for purchase of such materials and supplies. The purpose is to determine how much money must be borrowed at the bank. Give an inventory at the end of the year. In this inventory include all materials and supplies that would naturally be carried over for the conduct of the next year's business. Items common to both inventories need not be repeated. State the amount of increase or decrease in inventory. Take the average of the two inventories, and calculate the interest at 5 per cent.

C. Give an itemized statement of receipts and expenditures for the year, and state the balance. Do not include taxes, household or personal expenses. Under this head there will be the following three items:

1. Cash balance.
2. Farm income.
3. Labor income.

The cash balance is the difference between the receipts and expenditures.

The farm income is the cash balance plus or minus the difference between the two inventories.

The labor income is the farm income less the interest at 5 per cent—or such other interest as may seem proper—on the average of the two inventories.[64]

While Hunt discontinued his lectures on agricultural history when he went to Cornell in 1903, he elaborated another approach to the study of farming to which he had given considerable attention at Ohio, namely, comparative agriculture. Hunt devoted 242 of the 402 pages of *How To Choose a Farm* to a study of comparative agriculture in the western hemisphere. *Thus in his pioneer work in agricultural economics, Hunt took both the historical and the comparative approach to the study of facts, in terms which could be used in thinking about the economic problems of the farmer and in studying the facts of the individual farm.*

Hunt undertook in 1906 "a general study of all the agricultural conditions" in a part of Tompkins County, New York, with the assistance of P. J. White and John B. Shepard. The central feature was the application of Hunt's method of case studies to all the farms of an area.[65] The schedules were not tabulated or published.

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[64] Hunt, *How To Choose a Farm*, pp. 112–13.

[65] The townships of Ulysses, Enfield, and Newfield were covered in 1906. See G. F. Warren and K. C. Livermore, "Notes From the Agricultural Survey in Tompkins County," Cornell Agr. Exp. Sta. *Bulletin* 302 (Ithaca, 1911), p. 767. See also G. F. Warren, K. C. Livermore, *et al.*, "An Agricultural Survey – Townships of Ithaca, Dryden, Danby and Lansing, Tompkins County, New York," Cornell Agr. Exp. Sta. *Bulletin* 295 (Ithaca, 1911), p. 386.

WARREN TAKES OVER HUNT'S PROJECT

At that juncture Hunt went to Pennsylvania State College[66] and it fell to George F. Warren to take the lead in the further development of the survey method with the calculation of labor income as a unique feature conceived and initiated by Hunt.

The vital and original thinking of Thomas F. Hunt, aside from emphasizing the dynamic character of agriculture and the fact that the biological and the economic must always go hand in hand, caused him to introduce case studies of individual farms. The case study partook of the character of what, in more recent years, has been called budgeting.

While Warren got his idea of labor income as a central feature in the analysis of the farm business from Hunt's case studies, he dropped the budgeting idea and laid the emphasis upon the value of averages. Warren sought, through the study of averages, to determine the most profitable size of farm and the most profitable type of farming for the area studied. He simplified his problem by leaving out of consideration differences in the efficiency and the capacity of the farmers themselves and by assuming that what one man can do another can do. The result was something entirely different from anything Hunt had done. Hunt's view of a dynamic agriculture was lost sight of for the time being.

Warren had had some experience in survey work in 1903 and 1904.[67] While a graduate student he was put in charge of an apple orchard survey of Wayne County, New York.

Warren had come from Nebraska in 1902 to study horticulture and other agricultural subjects at Cornell. Professor Charles Edwin Bessey, of Nebraska, had recommended that he go to Cornell because L. H. Bailey was there.

In the spring of 1903, requests were made of Dr. Bailey to give the apple growers of western New York some information on the economic side of the business of apple growing. Bailey told them he knew nothing of that side of the subject, but had a competent young man to make a study of it. It was this suggestion that resulted in Warren's being given a fellowship for the next year and asked to make the Wayne County orchard survey, accompanied by a student of geology. The next year Warren surveyed Orleans County and on the basis of these pieces of research prepared a thesis which was accepted for the Ph.D. degree which was granted in June 1905. Being of a mathematical turn of mind, Warren used statistical methods in collecting and presenting the data. Speaking of the Wayne and Orleans County apple orchard surveys, L. H. Bailey said, "I think it not too much to say that these surveys marked a departure

[66] T. F. Hunt became Dean of the School of Agriculture, and Director of the Pennsylvania Agricultural Experiment Station of Pennsylvania State College in July 1907.

[67] See G. F. Warren, "Agricultural Surveys," Cornell Agr. Exp. Sta. *Bulletin* 344 (Ithaca, 1914).

in this kind of work, substituting the statistical method for previous means."[68]

In the apple orchard surveys Warren compared the results in terms of yields and gross income of the apple crops produced by the various farmers on the basis of the methods followed by the farmers with respect to spraying, cultivating, the amount and kinds of fertilizer used, distance between the trees, etc. To quote:

> In computing any one item the others have generally been ignored. The justification for this lies in the fact that so many orchards have been examined that other items will balance. For example, in determining the average yields for orchards having trees set at different distances apart, no attention has been given to the care of the orchard. There are orchards set at all distances that have been well cared for and others that are neglected. The large number examined makes an average of conditions. The danger of this method of making calculations lies in possible coordinate factors. The man who tills his orchard may be the man who sprays . . . . To test the method, some computations have been made on the basis of sub-groups of orchards otherwise similarly treated. The results have sometimes been changed in absolute amounts, but have been unchanged in their relation to each other, or have been so slightly changed as not to alter the conclusions to which they point.[69]

Warren was not working with a fixed idea of how to proceed. He was experimenting with an open mind both as to content and as to method. He said:

> The method of doing the work and the kind of information sought were much changed during the progress of the investigation. In the beginning the type of soil was thought to be of much more importance than it really is.[70] The most important points were not considered in the first few reports. The relative importance of the different problems was better seen as the work progressed . . . . Many improvements were made when similar work was started in Orleans county, but there are others that will be made if another county is studied.[71]

Warren spoke of his findings as:

> . . . results of experiments of the past seventy-five years in apple-growing in Wayne County. "Every farm is an experiment station and every farmer the director thereof."[72] But when these experiments are viewed singly,

[68] L. H. Bailey, "The Survey-Idea in Country-Life Work," *York State Rural Problems,* (Albany, 1913) Vol. 1, p. 242.

[69] G. F. Warren, "An Apple Orchard Survey of Wayne County, New York," Cornell Agr. Exp. Sta. *Bulletin* 226 (Ithaca, 1905), p. 245. (Ph. D. Thesis, Cornell University, 1905.)

[70] In the original conception of the orchard survey, the influence of soils on profits was thought to be a major consideration. In simplifying the survey to a study of the effect of certain practices upon yields, Warren left the soil factor out of consideration. Many years later continued surveys in Niagara County, New York, under the supervision of Gad Scoville, showed that apple orchards on the Dunkirk series of soils yielded many more barrels of apples per acre than orchards on the Clyde series. This is reported in T. E. La Mont, "Costs and Returns in Producing Apples in the Newfane-Olcott Area, Niagara County, New York, 1926 to 1928," Cornell Agr. Exp. Sta. *Bulletin* 565 (Ithaca, 1933).

[71] G. F. Warren, "An Apple Orchard Survey of Wayne County, New York," *Bulletin* 226 p. 246.

[72] While Warren put this statement in quotation marks, it is probably his own way of saying what L. H. Bailey implied when he wrote, "At the present time every intelligent farmer is an experimenter." See L. H. Bailey, "Extension Work in Horticulture," Cornell Agr. Exp. Sta. *Bulletin* 110 (Ithaca, 1896), p. 130. (Cf. *supra,* p. 348.) This conjecture is based in part on a conversation with Stanley Warren, son of G. F. Warren, who used the same sentence, without quotation marks, in "An Economic Study of Agriculture in Northern Livingston County, New York," Cornell Agr. Exp. Sta. *Bulletin* 539 (Ithaca, 1932), p. 7.

there are so many factors that the success or failure is as likely to be assigned to a wrong cause as to the right one. As a result we have the great diversity of opinion that exists among apple-growers. It is by studying and tabulating results from large numbers of orchards that important and unimportant factors can be properly correlated.[73]

In 1907 Warren took up the survey work in Tompkins County, New York, where T. F. Hunt left off when he went to Pennsylvania State College. Warren adopted Hunt's method of calculating labor income but somewhat limited the scope of the survey in other respects to facilitate obtaining the data relating to farm management. Warren's statement of his experience in conducting that survey in 1907:[74]

> In teaching classes in farm management Professor Hunt required each student to get a financial record of his home farm and calculate the labor income. The writer believed that this method could be extended so as to include all the farms in a region. In 1907 such records were obtained from all the farms in two townships. At this time the work of organizing the department was so heavy that there was not time to work with the students in the field, and as a result the records were inaccurate. For this reason they were never published. However, the conclusions were in accord with our later work. The next year [1908, the four remaining townships were surveyed] the work was checked more carefully and resulted in *Bulletin* 295.

That bulletin, usually referred to as "The Tompkins County Survey" was published in 1911.[75] Warren opened the report on Tompkins County by repeating the statement that he had used in his apple orchard survey — " 'Every farm is an experiment station and every farmer the director thereof.' " Following that statement he said:

> If we can collect and properly correlate the results of all the more or less accurate experiences and experiments, we shall have a body of most valuable agricultural knowledge . . . .
>
> . . . The first aim of this work is to find the profits for the year on each farm, and to find what conditions and types of farming result in the largest profit, or labor income; in other words, to find why certain farms pay better than others.[76]

With regard to the ability of farmers to give accurate reports, Warren said:

> The more we work on this, the surer we are that the accuracy of the returns depend more on the skill of the enumerator than on the farmer. Forty-five per cent of the farmers keep accounts. The majority of those who do not keep accounts can give accurate figures on the business receipts and expenses if the right questions are asked . . . .
>
> As indicating that the problem of getting such information is a matter of knowing how to do the work, very few good records were secured during

[73] G. F. Warren, "An Apple Orchard Survey of Wayne County, New York," *Bulletin* 226, p. 246.

[74] G. F. Warren, "Agricultural Surveys," *Bulletin* 344, p. 424.

[75] G. F. Warren, K. C. Livermore, *et al.*, "An Agricultural Survey — Townships of Ithaca, Dryden, Danby and Lansing, Tompkins County, New York," *Bulletin* 295.

[76] G. F. Warren, *et al.*, "An Agricultural Survey . . . Tompkins County," *Bulletin* 295, pp. 358, 387. Page 387 shows the names of the counties surveyed in 1907 and 1908.

the second year's work. In the third year, good records were secured from over three-fourths of the farmers. In Livingston county still better results were secured. In tabulating results, the accurate records only are used . . . .

Furthermore, most of the results given in this bulletin are based on the averages from a number of farmers. Even if the individual results were more or less inaccurate the averages may yet be accurate. An illustration of this may give the idea better than any mathematical theory of averages. The writer showed a stick 44.1 inches long to a class of 100 students. Each one guessed on the length of the stick. Some of the guesses were not nearly correct, but the average was 44.7 inches which is an error of a little over 1 per cent. Four persons measured the same stick with four different rulers. Their results averaged 43.6 which is only a little closer than the average of a large number of guesses. One who makes such a test is nearly always surprised at the accuracy of the average when some of the individual estimates are so inaccurate.

We have found that when we have about twenty farms in a group, the addition of more farms does not often materially change the result. We do not often draw conclusions from a group containing less than this number.[77]

Three years later in discussing "methods of doing agricultural survey work" Warren said,

Perhaps the first object of a survey is to find out the normal conditions. After this information is obtained it is possible to study the more successful and the less successful with intelligence. The strikingly unusual has too often been accepted as a model. Bulletins have been written describing in detail the methods used on some peculiar farm, under the impression that it was doing much better than the normal, less spectacular enterprise. Survey methods often show that such farms or practices are really not successful . . . .

If one does not know the normal, and the usual variations from that normal, he is more likely to attribute the success or the failure of a farm to the wrong than to the right cause. Not infrequently the very worse point in the system is picked out as the cause of success, just because that point is striking.

Mere travel through a country, visiting on farms, or speaking to farmers in a region is likely to result in memory of the striking or the unusual. It in no way takes the place of statistical study. The very assurance that comes from observation sometimes makes persons with such experience the last to believe the truth of statistical studies, just as the practical breeder who sees "instances" is sometimes the last to believe the results of statistical studies of inheritance. Survey methods disprove many popular notions about farming, just as biometrical methods disprove old superstitions about heredity.

Some facts can be determined only by studying farms. There are many kinds of agricultural information that can be determined only by survey methods, because the facts exist on the farms and nowhere else. The cost of producing a crop may be determined for a college farm, but this tells very little about the cost on regular farms . . . .

Before any experiment station knew of the existence of leaf-blister mite on apples, one farmer in Orleans county, New York, was controlling the mite by spraying. The oldest experiment on sod versus tillage for apple trees was conducted by a farmer. The results of five or more years of sod treatment of 88 orchards in Wayne and Orleans counties, New York—reported in bulletins 226 and 229 of this station—were obtained at less cost than would have been necessary in conducting a single experiment.[78]

[77] G. F. Warren, *et al.*, "An Agricultural Survey . . . Tompkins County," *Bulletin* 295, pp. 389–90.

[78] G. F. Warren, "Agricultural Surveys," *Bulletin* 344, pp. 420–22.

In 1911 Warren said,

The agricultural survey work in its various phases, is a recognition of the immense fund of information that has been secured as a result of experience and experiments on farms. It is an attempt to make use of this knowledge and to separate out the truths from the superstitions.

The work has very definite limitations as there are many new subjects in which no such basis of experience exists.[79]

In 1914 he said,

There should be some years of experience with a problem before the data for surveys exist.

There are cases in which the opinions of farmers should be gathered. In order to make these opinions of any value it is necessary that farmers should have had experience with the problem. Usually results are not based on opinions, but on figures. We do not ask farmers what they think about tilling orchards. We learn the tillage practice and the yields, and find the results. Farmers are likely to draw conclusions from exceptional cases, just as are all other persons. Statistics are very much better than opinions.

. . . When survey work can be done in a logical order it would appear that the topographic map prepared by the United States Geological Survey should come first. This locates roads and houses, as well as gives the contour lines. A soil survey is the logical next step. Following this should come a farm-management survey. This gives a great variety of information. . . . Following the farm-management survey should come special studies of particular crops or animals, and social and historical studies . . . .

By the surveys we find the most successful farmers, the most successful with small capital, with small area, with poor soil, or under other conditions.[80]

On the subject of factors in success, Warren wrote in a later bulletin:

It is frequently stated that success depends on the man. To some persons this seems a full and satisfactory explanation. But it explains nothing. It merely dodges the question. Success cannot come from *merely being* a genius. Success comes from *doing* certain things. The farmer does not sell himself. He sells milk, potatoes, hay, apples. It is such things as cost of production, amount sold, and price that determine his profits. The only way that a good farmer can express himself is by *doing* certain things. These things are fairly easy of analysis. If one farmer sprays his apples and another does not, it is the arsenic that kills the worms. Any other person can duplicate the result by spraying in the same way. If one farmer succeeds because he has better cows than another, this success can be duplicated. Certainly some persons will succeed where others fail, because they do things differently. Just what are the differences in method of procedure?

Many of the limiting factors are natural forces over which the farmer has little, if any, control. Other limiting factors that are not personality are prices, roads, freight rates, capital, and the like. These limit what can be done by the best, as well as by the poorest, farmer. With large numbers of records, it is possible to determine with a fair degree of accuracy the influence that each of the different factors has on profits. Any part of a farmer's success that is due to his acts can as readily be determined when large numbers of farms are studied . . . . The confusion is increased by failure to distinguish between a successful farm and a successful individual. . . .

[79] G. F. Warren, *et al.*, "An Agricultural Survey . . . Tompkins County," *Bulletin* 295, p. 386.
[80] G. F. Warren, "Agricultural Surveys," *Bulletin* 344, pp. 422–24.

. . . There are hundreds of things that have some effect on profits, but many of these can make only a slight difference. There are many other factors that set absolute limits to the profits. Of these important factors, a few stand out as the prominent ones on the vast majority of farms. From a long study of this question, it is found that the factors that most frequently determine whether the profits are poor, good or excellent are the size of the business, the diversity of the business, the crop yields, and the production per animal. For general farms, the labor income can be placed in the correct group in about eighty per cent of the cases, if one knows the area of crops grown, the yields of these crops, the receipts per cow or other important animal, and the percentage of the total receipts that come from cash crops. In other words, these four are the most important factors that control profits in farming.[81]

In discussing the importance of focusing attention upon the farm rather than upon the farmer, Warren said, "The farm produces the money."[82]

In his report on the work of the Department of Farm Management and Farm Crops for the year ending September 30, 1911, Warren summarized the findings of the Tompkins County survey:

We believe that we have determined some fundamental principles of profitable farm organization and management which are illustrated by the following facts: (1) The more lucrative farms have several leading products instead of only one; in other words, they are specialized, but specialized in two, three, or four directions rather than in one, and usually they include a number of minor products. The dairy farms that sell little produce except milk or butter are never doing very well. The profitable dairy farms are those that combine two or three important cash crops with dairying. Since dairying is only a partial day's work, the most successful farms are able to raise a large amount of cash products for sale in addition to doing the dairying, with practically no extra help. (2) The farms yielding greatest profit are doing a large business; in no cases have farms that are doing a small business been very lucrative. With a given type of farming, the size of the farm is the most important measure of the amount of business, and we have found that farms of 150 to 300 acres are the only very profitable farms for live-stock or general farming. (3) The most successful farms are getting better crops and better production from the animals than are the average farms, but they differ more in size of business than in quality. The most profitable dairy farms are not more heavily stocked than the average; but they are buying large amounts of grain feed and are raising enough high-priced cash crops to much more than purchase this feed. Under present conditions in New York, it seems more profitable to raise high-priced cash crops and buy feed than to try to raise the feed. (4) The best farms are contributing considerably more to the city food supply from an acre of land than are the average farms, and with much less labor of men, horses, and machinery for a given quantity of food.

There are many other important points brought out in this agricultural survey work indicating the important factors that affect the farmers' profits. This work is of great value in determining the fundamental principles of farm management. It furnishes the basis for much of our teaching work and is useful to farmers as well. The survey work should be extended as soon as possible so as to include results from each kind of farming region in the State.[83]

[81] G. F. Warren, "Some Important Factors for Success in General Farming and in Dairy Farming," Cornell Agr. Exp. Sta. *Bulletin* 349 (Ithaca, 1914), pp. 659–60.
[82] G. F. Warren, "Factors for Success," *Bulletin* 349, p. 657.
[83] Cornell Agr. Exp. Sta., *Annual Report,* 1911, p. xxxvii.

Another factor which came to be recognized as important in controlling profits is the number of "productive-man-work units" per man or "man equivalent." The idea of productive-man-work units was developed by Warren and K. C. Livermore in 1912 in an effort to find a better basis than acres or capital for comparing size of business. This led to comparing the number of productive-man-work units per man on the various farms as a basis of explaining differences in labor income.[84]

In later bulletins of the Cornell Agricultural Experiment Station, "labor efficiency" as measured in productive-man-work units per man is given a prominent place in the discussion of factors influencing labor income. This is true of Stanley W. Warren's bulletin on Livingston County, which is a most complete presentation of surveys covering the years 1908, 1919, and 1928. Stanley Warren said:

> Efficient use of labor was very important in all three years, but it was more important in 1928 than in either of the other years studied, because the purchasing power of wages had increased . . . .
>
> In all three years, the same increase in labor efficiency added much more to the labor income when the crop index was high, than when it was low . . . .
>
> Increasing the size of business, as measured by productive-man-work units, decreased the average labor income if the work units per man were less than 300, but increased the average labor income if there were 300 or more work units per man . . . .
>
> The farmers who combined high crop yields, high milk sales per cow, and high labor efficiency on a large business were, on the average, very successful.[85]

It will be noted that Stanley Warren did not distinguish between capacity and efficiency but lumped them together. With regard to managerial ability, Stanley Warren said, in the same bulletin,

> The discussion concerning the size of farm applies only to those who desire to run effective farms. The larger farms bring risk as well as opportunity. Some men are not able to direct labor effectively. Others do not desire a large business, because they wish merely a small home and can live on the means they now have. Before buying or renting more land, a farmer should consider his desires and his ability.[86]

For the Tompkins County survey, L. H. Bailey made the following prefatory statement:

> This agricultural survey in Tompkins county is a contribution to the country-life movement. So far as we know, it is the most complete census-taking of its kind that has yet been made. The first recommendation of the Commission on Country Life is that there should be organized a comprehensive plan for an exhaustive study or survey of all the conditions that surround the business of farming and the people who live in the country.

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[84] Conversation: H. C. Taylor with G. P. Scoville, Dec. 20, 1945. See also G. F. Warren, *Farm Management* (New York: The Macmillan Company, 1913), pp. 350–54.

[85] S. W. Warren, "An Economic Study of Agriculture in Northern Livingston County, New York," Cornell Agr. Exp. Sta. *Bulletin* 539 (Ithaca, 1932), p. 218.

[86] S. W. Warren, "Northern Livingston County," *Bulletin* 539, p. 140.

A soil survey of this region has already been published. The present survey is primarily to determine the best types of farming and best methods of farm management for the given region. Other kinds of surveys should also be made. These might include careful studies of religious, educational, sanitary, and general social conditions of the communities.[87]

While the survey method was accepted in a manner which doubtless gave G. F. Warren deep satisfaction, there was one phase of the farm management work that Warren projected which does not seem to have matured. For ten years or more Warren's annual reports included a project entitled "Studies of successful farms found by survey work." One report stated:

> The Department is continuing to study the most successful farms that are found by survey methods. The study includes not only those that are the most successful of all, but also those that are the most successful under special conditions, such as small farms, successful farms with small capital, and successful farms on unfavorable soil types. Successful tenants are studied as they change to new farms and the records of the old farms are obtained under different management. We hope to continue this work permanently. The work is being done by Professor Livermore.[88]

It would appear that this study was intended to throw light on the problem which was in Warren's mind when he asked, "Just what are the differences in methods of procedure?" This question followed the statement, "Certainly some persons will succeed where others fail, because they do things differently."[89] The long continuance of that project is evidence that Warren clearly recognized that lying behind yields per acre, yields per animal, productive-work-units per man, and size of business were things requiring further study. So far as we have been able to learn, no results of that study have been published. The problem is still with us and should continue to receive attention.

While Warren personally gave primary attention to price problems following the crisis of 1921, the farm survey work was continued by others under his general supervision. The greatest number of farms surveyed for any given year in New York State, prior to World War I, was 1,670 in 1914. There was a falling off in numbers for many years thereafter, but in the period 1927–32 previous numbers were surpassed. The use of the survey method by Cornell University is shown in its most complete form in a bulletin by Warren's son, published in 1932.[90]

Warren's method of making surveys soon became well known throughout the United States. The Graduate School of Agriculture was held at Cornell University in the summer of 1908 (cf. pp. 83–84). The methods used in the Tompkins County survey were fully

[87] G. F. Warren, *et al.*, "An Agricultural Survey . . . Tompkins County," *Bulletin* 295, p. 377.
[88] Cornell Agr. Exp. Sta., *Annual Report*, 1912 (Albany, 1913), p. lv.
[89] G. F. Warren, "Some Important Factors for Success in General Farming and in Dairy Farming," *Bulletin* 349, p. 659.
[90] S. W. Warren, "An Economic Study of Agriculture in Northern Livingston County, New York," *Bulletin* 539.

explained to those present by Warren. Many of the leaders in agricultural education and research from all parts of the United States went home convinced of the importance of the method.

U.S.D.A. Farm Management Surveys

W. J. Spillman, of the Office of Farm Management, U. S. Department of Agriculture, had been studying individual examples of successful farming. The results were by no means satisfactory to him. He decided to try the G. F. Warren method. In 1909 Spillman employed E. H. Thomson, who had worked with Warren on the Tompkins County survey, to take the lead in survey work in the Office of Farm Management. The first project undertaken by Thomson, as a member of the staff of the Office of Farm Management, was an agricultural survey in four townships in southern New Hampshire in co-operation with the New Hampshire Agricultural Experiment Station. Thomson indicated the purpose of the survey and his faith in its accuracy in these terms:

> The purpose of the survey was to determine the relative condition of the farms in the region, the prevailing types of farming, and the profitableness of these types for that section; also to learn the distribution of capital, income, and expenses, so as to gain a correct view of the agriculture as it now exists. The plan of the work was to visit personally each farmer within a certain area and obtain from him the information desired. In this way fairly accurate data were collected and these were checked up by careful inspection on the part of the person making the survey.
>
> The information obtained has been carefully tabulated and averaged so that the results as given may be considered fairly accurate. This accuracy depends on the law of averages. For instance, the individual farmer in giving the amount of his expenses for the year might make a considerable error, but he is just as apt to overestimate as to underestimate. According to the law of averages, therefore, when a considerable number of farms are taken into consideration the amount of the overestimate will about equal the amount of underestimate, so that the average is for practical purposes fairly accurate.[91]
>
> Inasmuch as several farmers engaged in each of the types of farming are making good profits, it would seem that the particular type is not so important as the management of the farm. At the same time it is a matter of no small importance that the type of farming should be adapted to the local conditions of topography, soil, and markets.
>
> The most successful farmers are not as a rule following methods of farm practice different from those of the unsuccessful, but are utilizing their land and equipment to much better advantage.
>
> The better farmers are making greater profits, not by spending less but by taking in more.[92]

In 1914 E. H. Thomson and H. M. Dixon, of the Office of Farm Management, published a comparative study of conditions in Indiana, Illinois, and Iowa.[93] Considerable attention was given in that bulletin

[91] E. H. Thomson, "Agricultural Surveys of Four Townships in Southern New Hampshire," U.S.D.A., Bureau of Plant Industry, *Circular* 75 (Washington, 1911), pp. 3–4.
[92] Thomson, "Southern New Hampshire," p. 19.
[93] E. H. Thomson and H. M. Dixon, "A Farm-Management Survey of Three Representative Areas in Indiana, Illinois, and Iowa," U.S.D.A., *Bulletin* 41 (Washington, 1914).

to the causes of differences in labor incomes. For example, on page 1, the statement is made, "Many farmers receive no wages for their work, due largely to poor farm organization or from following types of agriculture unsuited to their particular region." Again on the same page the authors said, "Successful farming is an individual, economic problem. The farm is a combination of enterprises and their individual organization will determine in a large measure its profitableness." The causes of low labor incomes were summarized by Thomson and Dixon:

> Of the 273 farms operated by owners, one-third of them make a minus labor income. Analysis of their farm business should show the reasons why so many of these men failed to receive anything for their labor. Is it because of poor crops, inferior stock, improper organization of the farm, or merely plain indifference on the part of the farmer? It may justly be said that all these factors are contributing causes.
>
> Leaving out of consideration the limitations set by the size of the farm and the capital invested, the characteristics of the inefficient farmer stand out prominently. Economically speaking, the greatest losses figured on the basis of a labor income are due to indifference or contentment on the part of the farmer. His farm area and capital are sufficient to earn a substantial income. He fails through neglect of work, low crop yields, inefficient stock, poor farm organization, and unused capital. His expenses are the same per acre as those of good farmers. His receipts are the weak point. . . . The men making the poorest and those making the best profits have large farms. Those just "breaking even" have, on an average, small farms.
>
> Many of these men are also poor farmers, but they can not be expected to do as well as those working a large area. We do not find the gross inefficiency among the tenants, for they must earn the rent which goes to the landlord, and if they receive nothing for their labor they can not live. They have no interest on which to live, as does the farm owner with a large investment. The country would be benefited if the few inefficient farm owners on the large farms were persuaded to rent their farms to enterprising tenants. They would still have as much or more than they are now getting, and the tenant would have a good living.[94]

W. J. Spillman, Chief of the Office of Farm Management, became a vigorous advocate of the survey method and emphasized especially the relative accuracy of the results of extensive farm surveys when compared with the result of intensive plot experiments. He stated that "large numbers of observations are very much more important than a high degree of accuracy in single observations." And continued:

> In a farm management survey made by F. E. Robertson,[95] of the Office of Farm Management, in the State of New Hampshire, one of the questions asked the farmers was, "How many pounds of milk have you sold during the past year?" Another, "What is the estimated value of the milk?" Seventy-nine farmers answered the first question and 135 farmers the second. Later the exact figures were obtained from the creameries to which this milk was sold

[94] Thomson and Dixon, "Survey," pp. 17–18.

[95] Note: It is believed that this reference is to the following publication: F. E. Robertson and L. G. Dodge, "Some Profitable and Unprofitable Farms in New Hampshire," U.S.D.A., Bureau of Plant Industry, *Circular* 128 (Washington, 1913), pp. 3–15.

. . . the comparison between the farmers' estimates and the actual figures obtained from the creamery:

Estimated pounds of milk sold (79 farms)	3,518,816 lbs.
Actual pounds of milk sold (79 farms)	3,487,320 lbs.
Difference	31,496 lbs.
Estimated value of milk sold (135 farms)	$106,163.00
Actual value of milk sold (135 farms)	106,155.00
Difference	$8.00

The farmer is not in the habit of thinking in pounds of milk, and it was to be expected that his estimates on this point would be less accurate than his estimates of the money obtained for the milk sold. Furthermore, the number of answers to the first question is smaller than to the second, thus making the average obtained less reliable. It is seen that the error in the farmers' estimates of the amount of milk sold is less than one per cent of the total, while in the case of the money received for milk sold the error is .00¾ of 1 per cent. In the case of both pounds of milk sold and money received the estimates of individual farmers fluctuated from about 50 per cent too high to about 40 per cent too low. . . .

The question now arises whether the average of a large number of estimates by farmers is not more accurate than the results obtained in ordinary plot experiments in the field. In other words, for those problems the data for which actually exist on the farms of the country can we not get a more reliable solution by gathering these data in large quantities than we can by ordinary experimental methods? The figures presented above indicate that we can. We all recognize that there are many problems the solution of which does not exist on farms, and that in the study of these problems we must use the more expensive and less accurate method of field experiment; but the solution of numerous problems does exist on the farms of the country today. Is it not the part of wisdom to obtain these solutions by a method which appears to be more accurate, and is certainly less expensive, than that in common use?[96]

In addition to Thomson's southern New Hampshire survey and the survey by Thomson and Dixon in Indiana, Illinois and Iowa, already mentioned, two other outstanding results of the survey work promoted by Spillman are the Chester County survey and the continuing surveys in Indiana, Ohio, and Wisconsin.[97]

W. J. Spillman saw the limitations as well as the merits of the Cornell type of farm management survey. He thought it could be improved. With that in mind, Spillman took part in the planning of the Chester County, Pennsylvania, study of farm management practices which relates to the crop year 1911–12. He participated also in the writing of the bulletin based upon the study. In addition to

[96] W. J. Spillman, "Study of Farm Practice vs. Field Experiments," Society for the Promotion of Agricultural Science, *Proceedings*, 1912 (Syracuse, N. Y.), pp. 109, 111–13.

[97] W. J. Spillman, H. M. Dixon, and G. A. Billings, "Farm Management Practice of Chester County, Pa.," U.S.D.A., *Bulletin* 341 (Washington, 1916).

H. C. Taylor and S. W. Mendum, "War Prices and Farm Profits," Wisconsin Agr. Exp. Sta. *Bulletin* 300 (Madison, 1919).

H. M. Dixon and H. W. Hawthorne, "Farm Profits — Figures for the Same Farms for a Series of Years. Washington County, Ohio, 25 farms, 1912-1918; Clinton County, Indiana, 100 farms, 1910 and 1913-1918; Dane County, Wisconsin, 60 farms, 1913-1917," U.S.D.A., *Bulletin* 920 (Washington, 1920).

the use of the survey method in obtaining such information as the farmers could provide, Spillman collected geographical and historical data relating to production and marketing of farm products in the Chester County area. The purpose was to put the facts relating to the internal activities on the farm in their setting with respect to outside conditions and activities which, in a large measure, determine what the farmer should produce for the market. Spillman headed the list of "the fundamental principles brought out clearly in this study" with a statement indicating the importance of studying the whole setting of the farm, geographical and historical, as well as the internal situation on the farm at the time of the survey. The statement:

> *The type of farming followed in any given case must be adapted to local soil, climatic and labor conditions, and especially to local conditions with reference to markets and market facilities, as well as to the business conditions existing on the individual farm.*
>
> *When the conditions affecting the agriculture of a region have remained stable for a considerable period local agricultural practice tends to become approximately what it should be for best results, provided the practice which gives the best immediate returns does not unfavorably affect soil fertility.* When conditions change, even slightly, if the change is permanent, local farm practice begins to change and ultimately adapts itself to the new conditions.[98]

The study of the environing world in which the farmer operates seems like a rational procedure, but the method was little followed by others. The lack of acceptance of the Chester County method may be explained in part by the fact that few of the men working in the field of farm management at that time had the necessary training in economic geography and economic history. Both L. H. Bailey and T. F. Hunt had conceived of a broad approach in the use of the survey method, but in the interest of definite results, G. F. Warren found it desirable to simplify the undertaking. He focused his attention on getting the facts essential to making up the annual balance sheet and measuring certain "factors of efficiency." He left off the schedule many items which Hunt had hoped to get in his effort to survey certain townships in Tompkins County, New York, in 1906. Spillman hoped that the survey method had become well enough established by 1912 so that it could be enlarged and enriched by using supplementary sources of information which would picture the farmer in a dynamic setting, ever subject to changing conditions, but in this he had few followers.

The repeated farm management surveys in Indiana, Ohio, and Wisconsin were stimulated and participated in by the Office of Farm Management. The Wisconsin segment of that undertaking consisted of surveys in Verona and Middleton Townships, Dane County, taken

[98] W. J. Spillman, *et al.*, "Farm Management Practice of Chester County, Pa.," U.S.D.A., *Bulletin* 341, p. 2.

for the five years beginning March 1, 1913, and ending March 1, 1918. The results were published in March 1919.[99] In that bulletin it is shown that in the Verona area, where the principal sources of income were dairy products and hogs, there was an important increase in income in 1916 and 1917 which was largely due to higher prices. Special emphasis was placed upon the wide differences in labor incomes. Those differences were explained, not in terms of size of the farm business which had been the explanation so generally given in stating the results of farm surveys, but in terms of "skill, energy, and good management." The bulletin contains a table and a chart[100] showing the dispersion of labor incomes.

> . . . each of the 60 farmers is given his place on the chart for each of the five years. This shows what skill, energy, and good management can do in the way of winning a handsome labor income at a time when other farmers are losing money. The fact that under most favorable conditions with respect to prices some farmers win no labor income beyond things furnished the family by the farm, helps one to understand why there may be discontent among the farmers when at the same time many farmers are known to be prospering. It is not to be expected that prices will be high enough to give a labor income to the indolent and inefficient, but it is necessary that the industrious, competent farmers be amply paid for their products if the business of farming is to continue to improve.
>
> In farming as in other occupations the prizes are for those who have ability. The wide range in labor income . . . gives evidence that the man of skill, industry, and judgment can hope to earn a handsome income by operating a farm.
>
> This is the ground for hope that there will ever be those who can climb the ladder to independence. But with this hope for the man at the head of the class goes the gloomy outlook for the man at the foot of the class.
>
> The number of farmers who made a minus labor income in the years 1913, 1914 and 1915 is entirely too large. On the average for the five years one out of every six farmers netted a loss ranging from $20 to $598, omitting what the family received from the farm. This would seem to be too high a percentage of submerged farmers even with war prices in 1916 and 1917 to bring up the average for the five years. Yet it must be admitted that under the same conditions more than half the farmers made labor incomes which, when combined with what the farm furnished the family, put them in a position to get ahead financially year after year. The future of American agriculture demands that the road be kept open to the top. A high percentage of the young farmers must be able to save from their earnings and buy farms. This requires adequate prices, and while there is no law of human justice which demands that prices be so high that the man without ability and willingness to work successfully under his own guidance shall be made to flourish as the manager of a farm, prices should be high enough to give at least five out of six a labor income. It took the prices of 1916 and 1917 to bring the Verona farmers up to this level and to give them a five-year average labor income of $408.[101]

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[99] H. C. Taylor and S. W. Mendum, "War Prices and Farm Profits," Wisconsin Agr. Exp. Sta. *Bulletin* 300 (Madison, 1919).

[100] See chart on p. 371 of this book, which is reproduced from p. 17 of the bulletin. It is believed that this was the first chart of its kind.

[101] H. C. Taylor and S. W. Mendum, "War Prices and Farm Profits," Wisconsin Agr. Exp. Sta. *Bulletin* 300, pp. 14–18.

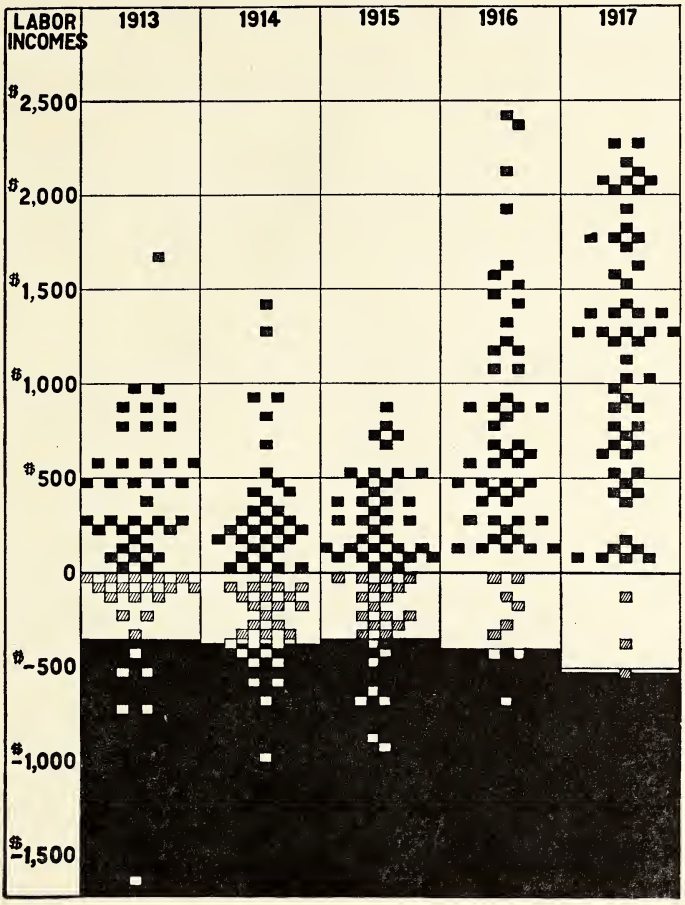


Fig. 9. — WITH FAIR PRICES THE FARMER'S OUTLOOK IS HOPEFUL

Each dot in this figure represents the labor income of one farmer. The grouping of the dots tends to follow the trend of prices of products. Farmers represented by dots lying between the black area and the zero line had to be content with interest and a part of their living from the farm. Those in the black area did not make interest on their investment, to say nothing of wages for their labor.

It will be noted that while the authors of Wisconsin *Bulletin* 300 were optimistic when looking at the high-profit farmers as individuals, they were not hopeful with respect to the low-profit farmers. Had the authors of this Wisconsin bulletin looked only at the average they probably would have seen the situation as did the authors of the Chester County bulletin reporting the survey of 1911–12 in which they concluded:

There is a very distinct tendency for the price of farm property, especially real estate, to rise to such a point as to absorb all the profits in farming except the wages of the operator. . . . Under such conditions it is impossible

to buy land at the prevailing prices with some degree of certainty that it can be made profitable.[102]

In December 1920 the U. S. Department of Agriculture published the findings of the continued surveys in Indiana, Ohio and Wisconsin.[103] The bulletin follows in considerable measure the pattern of Wisconsin *Bulletin* 300 but gives more details. The emphasis is on individual differences rather than upon averages. Furthermore, values other than money income are given more attention than had been usual in bulletins based upon farm surveys. In this connection the following quotation may prove interesting.

> For the farms studied these results show:
>
> That comparatively few farmers make large profits.
>
> That a considerable number of them are making but a bare living.
>
> That most of them make a labor income of less than $500 per year, over and above the things the farm furnishes toward the family living, which, however, constitute an important factor.
>
> That their average return on investment after deducting the value of their own labor was about 3½ per cent prior to 1916 and about 7 per cent for the years 1917-1918.
>
> In considering the business status of farming certain characteristics of the farm business should be kept clearly in mind. In the first place, farming is an individual business, operated and managed largely by individuals who vary widely in knowledge, ambition, and desires, and in their standards of living. Moreover, the farmer is not merely a laborer. He has money invested, and should receive interest on his investment and also pay for directing the business.
>
> Another characteristic of the farm business that should be considered in a discussion of farm profits is the peculiarly close relation of the home to the business. From an abstract accounting standpoint it may be possible to separate entirely the farm business from the home, but in reality it occupies an important place in the farmer's mind in weighing the advantages of farming as compared with those of other lines of business.
>
> Again, the prospect of an increase in the value of land has been a factor that has made many farmers content to accept a low rate of interest from the actual operation of the farm. As a matter of fact, a number of farmers are not making more than 2 to 3 per cent on investment, but in many areas the increase in land values has tended to offset this low return.
>
> These are factors that can not always be measured in dollars and cents in considering whether the farm business is profitable or not. From a strictly business standpoint, assuming that every business should pay a fair rate of interest on the investment therein and a fair return for the labor expended in its operation, there may be drawn rather definite conclusions relative to the farmer's returns. When these are made, however, the compensating factors, such as increase in value of land, the living furnished by the farm, the sentimental appeal of the home site, and the personal desires of the farmer, should be kept in mind.[104]

In discussing the wide range in labor incomes as portrayed on charts patterned after the Wisconsin chart, p. 371, the authors of

[102] W. J. Spillman, *et al.*, "Farm Management Practice of Chester County, Pa.," U.S.D.A., *Bulletin* 341 (Washington, 1916), p. 59. The survey covered the year March 1, 1911–March 1, 1912. See p. 13.

[103] H. M. Dixon and H. W. Hawthorne, "Farm Profits . . .," U.S.D.A., *Bulletin* 920 (Washington, 1920)

[104] Dixon and Hawthorne, "Farm Profits," pp. 2–3.

Bulletin 920 said, "The greater ability of these farmers, as expressed by the size of their business, their crop yields, their live-stock returns per animal, and the efficient use of labor, won for them the higher returns."[105]

In conclusion the authors said:

From the study of the profits of the farms in the three areas we have seen that the incomes of most farmers were much higher during the last few years than for previous years. In this connection it must be remembered, however, that the increase in income is more apparent than real because of the decreased purchasing power of the dollar.

Whether or not farmers have bettered their conditions through this increased income depends upon the way in which the additional income is used. If the additional money is used in better equipping the farm, providing more conveniences, or, in other words, raising the standard of living on the farm and in the farm home, and a more satisfactory rural social life results, the industry and the rural population have been benefited. On the other hand, if this increased income becomes absorbed in increased land value, it may be of immediate advantage to those selling out of the business but may react upon those who purchase farms by going in debt for them. These purchasers must make interest on the investment, enough for their own wages and management, pay living expenses, and make payments upon the principal. The harm comes when men purchase farms with the idea of paying for them out of the results of their labor and management and at the same time maintaining or improving their standard of living, but later find that they are unable to do this because the land values were not based upon what the land yields.[106]

In 1923 the Bureau of Agricultural Economics repeated the survey in the southeastern portion of Chester County, Pennsylvania. The findings were analyzed by Mordecai Ezekiel and published in April 1926.[107] The introductory statement in the bulletin reads:

The study of farm organization and practice presented in this bulletin was undertaken, (1) to investigate the ways in which dairy farmers of the Piedmont Plateau region of the Atlantic coast were adapting their farm operations to the changed conditions following the World War [I] period, and (2) to study the methods of organizing and operating their farms which make for greatest profits under these new conditions.

This bulletin is concerned primarily with the kind of farming which was most profitable during the year of the survey, and the kind which is likely to be most profitable in the future.[108]

The bulletin, in fact, carried little evidence as to which kind of farming is likely to be most profitable in the future. It was a recording of the situation in the farming year March 1, 1922–March 1, 1923.

The proposed bulletin on changes in farming has not been written. There had been a survey made of the same area in 1912 for the year March 1, 1911 to March 1, 1912. (Cf. pp. 368–69.) The proposed comparative study of the data obtained in the two surveys, a war and a depression having intervened, might have been very useful,

[105] Dixon and Hawthorne, "Farm Profits," p. 6.
[106] Dixon and Hawthorne, "Farm Profits," p. 56.
[107] M. J. B. Ezekiel, "Factors Affecting Farmers' Earnings in Southeastern Pennsylvania," U.S.D.A., *Department Bulletin* 1400 (Washington, 1926). This bulletin is often spoken of as the second Chester County survey.
[108] Ezekiel, "Southeastern Pennsylvania," p. 1.

but Ezekiel's interest was first of all in statistical method and he confined his discussion to the data obtained in the survey made in 1923.

Ezekiel's bulletin made extensive use of the principles of multiple correlation. By that method Ezekiel reached a conclusion somewhat at variance with conclusions reached over and over again by those who had used simpler methods in analyzing survey data. In general, farm management workers had reached the conclusion that size of business was the most important factor in determining labor income. The report on the Chester County survey of 1912 had carefully hedged on that point. The authors stated that *"Success in farming, measured in terms of the family income and standard of living, is directly proportional to the magnitude of the farm business, although the per cent of profits on the farm investment is, within wide limits, independent of the magnitude of business."*[109] In the elaboration of that point the statement is made that "as the size of farm increases the average labor income increases, and within the limits of the sizes found in this survey the increase in labor income keeps pace with increase in area."[110] But the authors are careful to state that "size of farm is not the only factor."[111] It will be recalled also that the reports on the Indiana, Ohio, and Wisconsin continued surveys emphasized the ability of the farmer rather than the size of the business as the cause of differences in labor income, but that was exceptional. "The greater ability of these farmers, as expressed by the size of their business, their crop yields, their livestock returns per animal, and the efficient use of labor, won for them the higher returns."[112]

Ezekiel, in reporting the Chester County survey of 1923, made use of the principles of multiple correlation in an effort to appraise the importance of various factors in determining labor income. He reached this conclusion:

> The relative importance of the efficiency with which the farm is operated, as compared with the size of the business, was determined by a statistical study of the dairy farms. This study showed that on the dairy farms the efficiency of operation was more than twice as important as the size of the business in determining operator's earnings. Differences in the efficiency of the dairy enterprise alone were responsible for two-fifths of the entire differences in earnings on the dairy farms, while differences in the efficiency of crop production, as measured by the crop index, were responsible for 7 per cent of the differences in operator's earnings. Thus efficiency in milk production was by far the most important factor in determining earnings on dairy farms.[113]

The authors of the two Chester County surveys are in agreement with respect to the importance of improving the quality of the dairy herd. The report on the 1912 survey states, "The results of this survey

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[109] W. J. Spillman, *et al.*, "Farm Management Practice of Chester County, Pa.," U.S.D.A., *Bulletin* 341 (Washington, 1916), p. 2.
[110] Spillman, *et al.*, "Chester County," p. 57.
[111] Spillman, *et al.*, "Chester County," pp. 57–59.
[112] H. M. Dixon and H. W. Hawthorne, "Farm Profits . . .," U.S.D.A., *Bulletin* 920, p. 6.
[113] Ezekiel, "Factors Affecting Farmers' Earnings in Southeastern Pennsylvania," U.S.D.A., *Department Bulletin* 1400, p. 23.

show very clearly that the farmers of Chester County can increase their profits more markedly and more certainly by improving the quality of their cows than in any other way."[114] The 1923 report on Chester County states:

> Improving the quality of the cows, paying more attention to feeding each cow just the right quantity of feed, and better balancing of rations are the important ways by which a farmer can increase the efficiency of his dairy. Efficient cows, comfortably housed, and intelligently fed and cared for, constitute the most important essential to profitable dairy farming.[115]

The results of Ezekiel's efforts to apply the principles of multiple correlation have been challenged. Stanley W. Warren criticized Ezekiel's findings[116] and took the position that multiple correlation, as it had been developed, had not yet proved so valuable as the "cross tabulations and gross correlations." Perhaps the thing that is needed more than complex statistical formulas is new approaches in discovering more of the facts, human and physical, which determine how farmers act and why.

The agricultural *Yearbook* for 1925 contains summaries of 71,515 farm business survey records from 435 localities in 45 states. That summary covers the 18 years, 1907 through 1924. The material is presented in a table covering 26 pages.

> . . . [the table] presents some results, in terms of averages per farm, from most of the farm business surveys and farm account books kept by farmers that have been made in the United States from 1907 to 1924. It includes essentially all the leading types of farming. The studies were made either singly or cooperatively in some form by the United States Department of Agriculture, and the agricultural colleges and experiment stations.[117]

In the fiscal year 1926–27, 57 out of 125 research projects in farm management under way in the United States were conducted by means of the survey method essentially as developed at Cornell.[118]

Soil Types as a Factor

While G. F. Warren discarded soil types as a factor in his study of apple orchards in 1903 and 1904, and also dropped the soil inquiry out of the Tompkins County farm management survey made in 1908, I. G. Davis and C. I. Hendrickson of Connecticut carried through a farm management study in the town of Lebanon in 1922–23,[119] in which soil types proved to be a significant factor in determining profits.

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[114] W. J. Spillman, *et al.*, "Farm Management Practice of Chester County, Pa.," U.S.D.A., *Bulletin* 341, p. 77.

[115] M. J. B. Ezekiel, "Factors Affecting Farmers' Earnings in Southeastern Pennsylvania," U.S.D.A., *Department Bulletin* 1400, p. 35.

[116] S. W. Warren, "Multiple Correlation Analysis as Applied to Farm-Management Research," Cornell Agr. Exp. Sta. *Memoir* 141 (Ithaca, 1932), pp. 27–30.

[117] U.S.D.A., *Yearbook*, 1925 (Washington, 1926), p. 1285.

[118] See W. E. Grimes, "Report on Research Work in Farm Management," in *Preliminary Report of a Survey of Economic Research in Agriculture in the United States During the Year July 1, 1926 – June 30, 1927*, Social Science Research Council, Advisory Committee on Economics and Social Research in Agriculture (mimeographed report, 1927), p. 3.

[119] I. G. Davis and C. I. Hendrickson, "Soil Type as a Factor in Farm Economy. I. The Town of Lebanon," Connecticut Agr. Exp. Sta. *Bulletin* 139 (Storrs, 1926).

Survey records were secured in person from two hundred and twenty farms. The records secured include detailed receipts, expenditures, inventories, and other items usually found in the conventional farm management survey for dairy regions, and in addition, detailed schedules relating to methods of marketing, utilization of the farm land and certain questions relating to farm practice and to the nativity of the farmer.[120]

When the results of the records of one hundred and eighty farms in the town of Lebanon for 1922–1923 were sorted by soil type and nativity of the farmers, it was found:

That a much higher proportion of the Charlton (Area I) than of the Gloucester (Area II and IV) area is utilized for crop production.

That average labor incomes were distinctly higher on the Charlton than on the Gloucester areas. . . .

That the most significant and striking difference in the two soil areas is in milk production per cow. Milk production per cow is approximately 25% or nearly 1,000 lbs. per cow higher on the Charlton than on the Gloucester soil areas and this is not changed when corrected for breed differences. . . .

Can these conclusions be applied to regions of the Gloucester and Charlton type wherever found? If they can, then we have set up a partial basis for a sound farm organization, management and land utilization program for these types, subject of course to the modifications imposed by location with reference to markets and transportation facilities. . . .

. . . If Lebanon is an adequate and representative sample, then we should be able to set up optimum schemes of farm organization and land utilization for these soils; we should be able to localize our dairy industry and other agricultural industries in regions where they can continue to prosper and meet competition; we should be able to develop an economically sound, long-time forestry program, one which will encourage forest production on land not likely to be needed for food production for fifty or sixty years or more; we should be able to discourage purchase of farms for agricultural purposes on those soil types where such purchases can only bring loss to the purchaser, injure other farmers thru their competition and delay the utilization of these lands for the production of forest products which the eastern United States will need sorely a generation hence.[121]

The Survey in Farm Management Extension

For a decade or more the survey method dominated the extension service in farm management even more completely than it did the research work. The use of the farm survey in agricultural extension work originated in Chemung County, New York, where, in 1912, Gad Parker Scoville was employed as County Agent. Scoville was thrown into the work "without a pattern to work to." He had learned the survey method by participating in the Livingston County, New York, survey in 1909, so he started the extension work in Chemung County by making a farm management survey. He tried that approach because it was a method that he knew something about. He tabulated the results of the survey and took them back to the farmers. The analysis of each farmer's survey record was explained to him and compared with the average and the best.

[120] Davis and Hendrickson, "Lebanon," p. 57.
[121] Davis and Hendrickson, "Lebanon," pp. 51–54.

That use of the farm survey in extension work aroused the interest of Clarence Beaman Smith, who was at that time in charge of the Section of Field Studies and Demonstrations which was set up in 1910 in the Office of Farm Management of the U. S. Department of Agriculture. In writing of that work, Smith said:

> . . . The staff of this section made studies of outstanding farms they found here and there throughout the county and, upon request from farmers, they were given individual help in analyzing their farm business and replanning their field and farm organization . . .
>
> Then, in March, 1911, came . . . George F. Warren and K. C. Livermore's *Cornell Bulletin No. 295,* entitled: "An Agricultural Survey—Townships of Ithaca, Dryden, Danby, and Lansing, Tompkins County, New York." This was an epoch-making bulletin in the farm management field. It gave to the world the details of the survey method of studying farming. It set up labor income and certain other factors as a method of determining the relative efficiency of farmers. It brought clear thinking, clarification, and system out of confusion . . . .
>
> About 1912, G. P. Scoville, then a county agent in Chemung County, New York, a former pupil of . . . Warren, and a joint employee of the Federal Office of Farm Management and Cornell College of Agriculture, showed us more fully how to apply farm management survey data in extension work. His plan was so logical and attractive that the writer, with the encouragement of . . . Spillman, sought and was granted the privilege of using $50,000 out of a $400,000 appropriation to the Federal Office of Farm Management for cooperation with the states in the employment of state farm management demonstrators . . . .[122]

Under the new plan the starting point was to teach men from other states to use the farm survey method of farm management demonstration as it had been developed in the state of New York.

In speaking of that development in the extension service, Maurice Chase Burritt, Director of Extension Service in New York at the time, said in 1914:

> . . . Early in July, C. B. Smith, in charge of Farmers' Cooperative Demonstrations in the North and West, proposed the general plan of atempting to demonstrate the value of the farm survey in New York counties having farm bureaus. After consulting with the Farm Management Department, it was agreed that a farm management extension agent, jointly employed by this Department of the College and the Farmers' Demonstration division of the United States Department of Agriculture, should be appointed with headquarters at the College of Agriculture. On September 1st, G. P. Scoville, for three years manager of the Chemung County Farm Bureau in southern New York, was appointed an Assistant Extension Professor of Farm Management in the College of Agriculture and a farm management demonstration agent for the Department of Agriculture. The latter pays about three-fourths of the expenses of the project. . . .
>
> Professor Scoville has his office with the Farm Management Department, where clerical assistance and tabulating equipment are provided. Either the original or a proved copy of every farm management survey record taken in the State is filed in this office, where it is available for reference or copy-

[122] C. B. Smith, "The Origin of Farm Economics Extension," *Journal of Farm Economics,* 14:19–20 (January 1932).

ing by the College and the Department. No copy will be filed until the record has been computed and verified in every respect by Professor Scoville himself.

In general, the method of work is for Professor Scoville to arrange with a Farm Bureau manager to come into his county on a certain date, and to proceed with him or with an assistant representing the Bureau, to take at least sixty survey records in a community as typical as possible of the county. This work will occupy from one to three weeks, according to the number of men taking records. The records are then tabulated for the use of the Farm Bureau manager in the county. A summarized statement is also made of each individual record and this is returned to the farmer furnishing the record, with a letter making suggestions regarding his business.[123]

As a result of C. B. Smith's interest, and the co-operation of Burritt, Scoville was made the leader of a joint federal-state project for the training of men in the use of the survey method in farm management demonstration work with headquarters at the Farm Bureau Office in Elmira, Chemung County, New York.[124]

Loring Hapgood Goddard, a successful farmer and experiment station worker in Ohio, was selected to organize the farm management demonstration work in the northern and western states under the general supervision of C. B. Smith. Goddard gave to the work the full strength of his forceful personality from 1914 to 1918. In speaking at the annual meeting of the Farm Management Association in 1914, he said:

Farm Management Demonstrations have been taken up by the Department of Agriculture in cooperation with a number of States by arranging for one or more demonstrators to work in each State. Within the States the demonstrations are conducted in specially-selected areas which are widely distributed throughout the State; which have been selected because of being typical of more extensive farming areas, and which are reasonably uniform within themselves. In conducting the work within any one of these areas the demonstrator first analyzes the business of each farm in the area with special reference to the labor income of the operator, the sources from which it is derived, and other important factors governing it. He then compares the business of each farm with regard to all of these points, usually with the average of all farms in the area and always with the average of a few of the best ones. The conclusions derived from this analysis and comparison are then taken back to each farmer in such a form that he himself can readily tell whether in order to secure a larger income he needs most (a) to enlarge his business, perhaps by renting more land or intensifying on what he has, or possibly by increasing his livestock; (b) to improve the production of crops or livestock already in use; (c) to diversify his business by having more crops or kinds of livestock producing a fair-sized income; or (d) whether some combination of these will be more certain to bring about the desired results. . . . The purpose of the investigator in making these surveys is to determine

[123] M. C. Burritt, "Farm Management Extension Work in New York State," American Farm Management Association, *Proceedings*, 1914 (Published by the Association, 1915), pp. 62-63.

[124] Some of the men who took that special training with Scoville in 1914-16 were: H. B. Cannon, Montana; W. L. Cavert, Minnesota; S. B. Cleland, Minnesota; B. W. Ellis, Massachusetts; W. L. Elser, Ohio; C. W. Gilbert, New York; R. Green, Missouri; H. F. Keyes, Oregon; P. E. McNall, Kansas; R. N. Miller, Washington (received training in Chautauqua County, New York); L S. Robertson, Indiana; S. H. Thompson, Iowa; R. H. Van Scoik, Kansas; H. O. Watrud, Wisconsin (received training in Chautauqua County, New York); and H. F. Williams, Nebraska.

general farm management principles from averages of such large numbers of farms that the peculiarity of the individual farms may be ignored. He includes with proper classification all kinds of farms being operated under all kinds of conditions and in such large numbers that safe conclusions may be drawn from the averages. He does not give much consideration to the individual farm. The demonstrator on the other hand gives his special attention to the individual farm. He must have a record, not only of the methods used in operating any given farm, but also of the conditions in detail under which such operations were conducted. In other words, in order to be able to give wise counsel to the operator of that farm, his record must be based upon . . . a normal farm year for that particular farm. For example, he must know whether it was a wet year or a dry year, and if so, what effect did these weather variations probably have upon the farm business and the farm income. He must know whether the farm operator was hindered by sickness or accident, either on his part or that of members of his family or of those associated with the farm. The demonstrator must also secure information that will indicate to him the mental, physical, financial and family ability of each farmer to execute any plans which may be agreed upon.

No special set of questions has been worked out as yet to be used in connection with this personal feature of the survey. Indeed, it is questionable if any such can be worked out. Questions of this character are so apt to irritate the farmer that much care must be used in securing the information. If possible, it should be secured without asking direct questions . . . .

These Farm Management Demonstrations are carried on by the Department in cooperation with the various State agricultural colleges, the work being closely coordinated with that of the Office of Farm Management of the Department of Agriculture and of the Farm Management Departments of the respective State colleges, as regards methods of work and interpretation of results.[125]

C. B. Smith, who had come to look upon the farm management survey as the central feature in farm management demonstration work, presented the following credo:

We believe that demonstration work in agriculture should be such as to meet the real needs of each farming community.

We believe the needs of any particular community can best be determined by an actual analysis of conditions on the ground.

We believe the Farm Management Survey is the best means known to date of analyzing these conditions.

We believe that demonstrations in farm management based on such a survey are possible and practicable and of fundamental importance.

We believe that in general, farm management demonstrators should emphasize at this time three points: (1) The need of a business large enough to make possible a reasonable labor income; (2) The need of a farm organization that will permit of the utilization of the men, teams, and machinery of the farm, the maximum number of days during the year on profitable enterprises; (3) The need of a high quality of business as shown by yields and returns from stock that are equal to or above the average, and of the efficient utilization of land, labor and capital.

In carrying the results of a farm analysis to the farmer, we believe in a simple farm efficiency factor sheet that shall direct attention of the farmer to the vital points of the farm organization.

We believe in that form of presentation in farm management demonstra-

[125] L. H. Goddard, "Farm Management Demonstrations," American Farm Management Association, *Proceedings*, 1914 (Published by the Association, 1915), pp. 56–60.

tions which enables the individual to see where he stands as a farmer in the community in comparison with the average and the best farmers of the community as regards labor income and farm organization factors.

We believe in follow-up work and the repetition of the farm analysis from year to year on the same farms.

We believe it is desirable and in some cases possible to assemble groups of six to a dozen farmers at school-houses or farm houses and teach the farmer himself how to work out his own labor income and the important factors affecting it.

We believe in definite completed demonstrations with individual farm operators; but we regard these individual demonstrations as a means of developing the general farm management point of view of the farm as a business, rather than as the end in itself.[126]

In the earlier farm management extension work the process consisted in taking from 50 to 100 records in an area, analyzing the records, and then taking to each farmer his record, explaining it to him, and showing him how his results compared with the average and also with those in the top group. In setting up that work there was a tendency to stereotype the plan of work throughout the United States. Supervision from the Washington office tended to operate in that direction, but some of the farm management demonstrators were inclined to experiment with ideas of their own. For example, in the years 1915–17, H. C. M. Case was farm management demonstrator in the state of Illinois. He had ideas with regard to the most effective method of taking the survey record and getting the results into the mind of the farmer and effective in his farm practices. Case gave half of a day to each farmer. He not only took the record but figured out the results and talked them over with the farmer.

Goddard wrote to Case protesting that he was taking too few survey records per day. Goddard pointed out that others took four records per day. Case invited Goddard to come out from Washington for a conference. Goddard did so and went with Case to visit a farmer. Goddard was introduced as an Ohio farmer and sat behind a newspaper listening to Case and the farmer as the work proceeded. The farmer first visited was a tenant who raised corn and oats on a half and half basis, paying cash rent for the hay and pasture land, and then fed his share of the grain to livestock. He had almost made up his mind that keeping the livestock was too much work and that he would change over to selling his corn and oats as did the landlord. But, after Case had filled out the record and analyzed it, the facts showed that the tenant was making about twelve hundred dollars a year more than the landlord. That could be explained only in terms of the livestock enterprise. The farmer expressed surprise and decided at once to continue with the livestock.

After listening to the procedure, Goddard rode back to Urbana in silence until, nearing the city, Case asked Goddard what he thought

[126] C. B. Smith, "What This Meeting Teaches in Farm Management Demonstration," American Farm Management Association, *Proceedings*, 1914 (Published by the Association, 1915), p. 80.

of the method. Goddard did not commit himself but told Case to go ahead using the method as he had developed it.[127] We have found no evidence that Goddard propagated the Case method.

Case soon followed up the survey by interesting the farmers in keeping financial accounts. Case was working under the supervision of W. F. Handschin who had been trained at Minnesota where keeping farm accounts was the favored method of gathering farm management data.

At the University of Wisconsin, D. H. Otis was in charge of the farm management demonstration work, although one of his assistants was the farm management demonstrator. Otis used a schedule which was a slight modification of the one developed in New York. With the financial assistance of ex-governor W. D. Hoard, of *Hoard's Dairyman,* Otis put on a farm management contest which stimulated much interest in farm records and accounts. While Otis used survey records in the first years of his work, he gave much attention to stimulating farmers to keep financial records, and more and more the summarizing of the account books became the principal source of the facts with which to fill out the summary sheets giving results of the farmer's annual operations. In connection with that work, Professor Otis invented and patented an ingenious account book with leaves of different lengths which made it possible to have the monthly summaries for the 12 months all visible at the same time.

After Otis withdrew from active service at the University of Wisconsin in 1919, John S. Donald and Samuel W. Mendum became responsible for the farm management demonstration work. They, too, gave special attention to stimulating farmers to keep financial accounts. One of Donald's favorite exhibits for graphic illustration of the problem was a clock without hands, the pendulum of which kept swinging without telling the time. Donald gave special attention to getting the young folks in high schools to keep the accounts on their parents' farms. While this effort met with excellent response, it was frowned upon by the officials in Washington. It did not conform to the pattern. Donald was dropped from the role of farm management demonstrators and the work was discontinued.

Soon after H. C. Taylor became Chief of the Office of Farm Management[128] of the U. S. Department of Agriculture in 1919, he encouraged the administration of the extension service to employ H. C. M. Case to work with the farm management demonstrators with a view to stimulating the use of the Illinois method. The account book method of obtaining the facts and the personal conference method of using them had been thoroughly tested by Case in Illinois and had proved effective in Wisconsin. Case was appointed in 1919 and

[127] The above story was given to H. C. Taylor by H. C. M. Case in a personal conference at Urbana, Illinois, June 7, 1946.

[128] U.S.D.A., *Report* of the Chief of the Office of Farm Management and Farm Economics for the fiscal year ended June 30, 1922, p. 2. The name was changed to the Office of Farm Management and Farm Economics as of July 1, 1919.

from that time on account books increased and survey record taking decreased.

Liberty Hyde Bailey's Survey

In the middle of the 1920's L. H. Bailey indulged himself in the luxury of a survey of his own. It was made by correspondence and at small expense compared with the large sums then being expended on surveys by federal and state agencies, but it is the most significant survey of its time. To persons "who made their living from farming," Bailey wrote:

> . . . Now that the discouragements of agriculture are so much stressed, I am asking farmers in various parts of the country whether they really experience joy in farming and to indicate to me, if they will, what is the main attraction they find in the farmer's life.[129]

Bailey explained:

> I wanted chiefly to know whether the "'main satisfactions in the farmer's life" were still to be expressed in the sentiments, or whether these old values have been smothered by the current commercial emphasis.[130]

One hundred and twenty-nine replies were received to Bailey's inquiry. After he had read them he was able to say:

> . . . I find these old sentiments still strong. . . .
> In the letters from these 129 farmers only one considers the money profit to be the main satisfaction in farming and the writer of it now represents a farm organization; but he adds that it is not so much for the profit itself as for the comforts and conveniences the profit enables one to obtain . . . .
> . . . The chief satisfactions, as revealed in the letters, are the independent way of life, healthfulness of the occupation, pleasure in productive labor, joy of the cooperative family living and the wholesome situation for the children, love of nature, close contact with living growing objects and the response of these objects to the touch of the good farmer, the satisfactions of landscapes, innate love of land, consolation in the ownership of real property.[131]

Bailey concluded, ". . . the present letters are especially notable as reflecting a background sentiment in a more or less troubled epoch."

That chapter of Bailey's, containing 14 short pages, gives one of the basic reasons why the occupation of farming is overcrowded and why farmers are slow in getting out of agriculture into other occupations when financial conditions are relatively bad in agriculture compared with the financial returns in other occupations. Bailey's findings indicate that the economic motive is not the dominant motive with farmers. They know other values which mean so much to them that the loss of the dollars, which makes the difference between prosperity and agricultural depression, is tolerated. This helps to explain why farm production continues even though prices are too low, and the slowness with which agriculture gets out of a depression.

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[129] L. H. Bailey, *The Harvest* (New York: The Macmillan Company, 1927), p. 196.
[130] L. H. Bailey, *The Harvest*, p.197.
[131] L. H. Bailey, *The Harvest*, pp. 198–99.

That survey is significant also because, coming 20 years after Bailey initiated the widely used farm management survey, which focused attention upon financial results and gave special emphasis to money incomes, it demonstrated that farmers still held to those values which money cannot buy.

In 1919 H. C. Taylor included in the new edition of his *Agricultural Economics* a chapter entitled "Economic Motives and Ideals in Agriculture." In that chapter he pointed out that the farmers' life and work is a response to a complex set of motives of which the economic motive is just one. In speaking of the joy of farm work the author said:

> . . . So satisfying is this life to many a man that he will continue his activities as a farmer year after year, even though he knows that men in other occupations are winning very much more money than he, for he is wise enough to recognize that he is paid in direct satisfactions as well as in money, and that much of the richness of his life is due to things which money cannot buy.[132]

In the light of the complexity of the motives of men and to make clear that he was not assuming an economic man who would always follow his highest economic interests regardless of other considerations Taylor said:

> . . . The purpose of the author is not to explain how men will act under given conditions. The motives of men are too complex and too varied for this. What is attempted is to show what it is in the economic interest of the farmer to do under given conditions.[133]

Survey of Rural Vermont

A survey of another type was made by The Vermont Commission on Country Life.[134] That survey included a study of the people, the land, the agriculture, the forestry and woodworking industries, fish and game, the tourist trade, and all the educational and religious agencies as they affected the life of rural people. The work was done by 16 committees with the help of state and federal agencies and a few persons employed by the Commission to work with the committees. The committees combined fact gathering and group thinking. As the subtitle of their report indicates, the committees were thinking not only of the present but of the future. They studied the facts relating to the past and the present as a foundation on which to build plans for future progress in every phase of the life of the rural Vermont people.

The Commission did not look upon its work as finished when the report was published. The preface to the report, in mentioning the work of the several committees, states: "Their reports taken together constitute the starting point for further thinking as a basis

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[132] H. C. Taylor, *Agricultural Economics*, (New York: The Macmillan Company, 1919), p. 15.
[133] Taylor, *Agricultural Economics*, p. 19.
[134] *Rural Vermont — A Program for the Future*, by Two Hundred Vermonters (Burlington, The Vermont Commission on Country Life, 1931). Note: That survey was initiated by H. F. Perkins, financed by the Rockefeller Foundation on the recommendation of the Social Science Research Council, and directed by H. C. Taylor.

for future action. It is confidently believed that specific projects will result, vitally related to the welfare of the state."

Governor John E. Weeks, Chairman of the Commission, defined progressives as those who strive for "the furtherance of present ideals in life and the ideals which may grow out of our activities." A statement in the introduction to the report reads:

> The immediate purpose of the Commission is that of scientific planning for action leading towards higher goals. Scientific planning consists in gathering facts, sifting them, and meditating upon them until their significance is clearly seen in their true relation to the everyday life of a forward-looking people. The clarified mental pictures which result from this deeper study of the facts of life in their varied and complex relations make possible the setting up of useful plans. A vision of the possibilities gives new courage. The execution of well-laid plans makes that courage fruitful.[135]

An Appraisal of Survey Methods

Agricultural surveys in their various forms provide generalized pictures of the farming and the conditions of living of agricultural people at given times and places. Since surveys are made of different areas, they provide a basis of comparison. The facts obtained by the survey parties may be useful first of all in diagnosing the ills of agriculture at a given time. Since surveys are made from time to time, they may be useful as a source of material for the study of changes which have taken place, for describing the forces which brought about those changes, and for predicting future trends. Agricultural surveys give the farmer facts which may be helpful to him in understanding the general conditions under which he produces and markets his products and in measuring his own success in farming.

The intensive farm management survey provides more detail and points more definitely toward the general course of action which is likely to prove profitable than do the descriptive agricultural surveys, but no system of fact finding and information-giving can advance the day to day answers to economic questions — the situations and combinations of forces are too complex and too changeable. These answers must come from the mind of the farmer. Fact finding and information-giving may supplement the experience of the farmer, give him more facts in terms of which to think, and thus improve the basis of his judgments, but he alone must make the decisions.

The intensive statistical type of farm management survey, developed by Cornell University, proved useful as a means of supplementing the available census material. It provided more detailed information needed in studying types of farming and in comparing the profits earned by the individual farmer. The Cornell survey method proved exceedingly useful in the pioneer days of farm management extension work in providing county agents and farm management demonstrators with a quick method of becoming acquainted with the economic phases of the agriculture of the area to which they

[135] *Rural Vermont*, p. 2.

were assigned. The farm survey was useful in making a preliminary diagnosis of a farmer's management problems. But after the method in its established form had made its contribution, there remained many unanswered questions which suggested the need of other forms of inquiry.

The emphasis of the research worker using the Cornell survey method was on averages. On the average, certain combinations and proportions of crops and livestock were more profitable than others in a given area. The accuracy of the survey method was based upon the "law of averages" which meant that "the errors on the one side would balance the errors on the other." But the extension worker dealt with individual farmers. Community averages were not enough. The extension worker endeavored to show each farmer how his own results compared with the averages. Even though the "law of averages" overcame the inaccuracies of individual estimates of component facts of community averages, the wide range of errors covered up and, in a measure, cancelled in the average, may exist in full force in a given farmer's survey record. This, if recognized as a weakness, may become a strength if it stimulates the farmer to list his assets with great care at the beginning of the year, to keep careful records of receipts and expenditures, and thereafter inventory his assets at the end of each year with a view to having an accurate basis of measuring the results of his year's business. Where the survey stimulates careful bookkeeping, and in thousands of cases that has been true, it is especially useful in extension teaching.

The farm business analysis based upon the farm survey was recognized by its proponents as a useful guide in redirecting farm management only after enough time had elapsed following changes in the market, or in costs of products, for the leading farmers to find and make the proper adjustments. The survey method will then reveal what the more successful farmers have done. The surveyor proclaims to other farmers his findings and thus stimulates the more backward, perhaps less capable, to follow the more successful and progressive farmers. This implies that the significant changes were in the past and that settled conditions have been attained. The method assumes that by looking at the adjustments which have been made we may find the guidance for going forward under well-settled static conditions. It has long been recognized that in dynamic periods this method of studying successful practices does not provide the information required for determining the necessary new adjustments to meet the new conditions.[136]

[136] In 1863 Donald G. Mitchell said, "The ancients recommended a rule of practice, because it had succeeded in a score or a hundred of trials; but if some day it failed, they must have groped considerably in the dark for the cause. *We* lay down a rule of practice in obedience to certain clearly determined natural laws; and if failure meets us, we know it is due — not to falsity of the laws — but to some one of a rather wide circle of contingencies, not foreseen or provided against. And it is the due adjustment and measurement of precisely this circle of contingencies — whether belonging to weeds, weather, or markets — which most thoroughly tests the sagacity of the modern farmer." In *The Works of Donald G. Mitchell*, Vol. 6, *My Farm of Edgewood* (Edgewood edition; New York: Charles Scribner's Sons, 1907), pp. 295–96.

In the 1920's and the 1930's, when farmers were confronted with new problems ushered in with the crisis of 1921, the survey method of farm management demonstration had little to contribute to the solution of the new problems. As had been indicated by Warren and by Spillman, it is only after the leading farmers have had time to gain the experience necessary to adjust their farming to the new conditions that the survey can be used effectively in obtaining the fact basis for making agricultural adjustment.

This is illustrated by the British experience in making surveys. In the last third of the eighteenth century, Arthur Young and William Marshall made effective use of the agricultural survey in stimulating improvements in agriculture. The Industrial Revolution had ushered in a new era for the English farmer. Enough time had elapsed to enable the best farmers to "muddle through" and find profitable methods which could be taught to other farmers to the great advantage of the farmer, the consumer, and the nation. Under those conditions the agricultural surveys and the publicity given to the results were of great value. Likewise, in the United States, in the first decades of the twentieth century the depression of the 1890's was far enough in the background so that many farmers had made the necessary adjustments. Others had not. The time was ripe for the effective use of the farm survey in agricultural research and education. Liberty Hyde Bailey recognized this fact and made timely use of the agricultural survey.

In projecting plans for future action under changing conditions, there is need for a system of looking ahead which uses the principles derived from pertinent facts of past experience in conjunction with the facts relating to realized and anticipated changes in the conditions of production and marketing. Price analysis and price forecasting, along with historical and comparative studies of agriculture to give perspective, and an accounting system that will anticipate costs and results of readjustments, are essential to forward looking in farm management. The great industries have made good use of these methods in planning their programs of production. Agricultural economists have made some progress in the application of these methods, but there is much to be done which has not been undertaken. Of these methods more will be found in other chapters.

Of the many questions left largely unanswered by the farm management survey, those relating to the personal equation are most important. It is a curious thing that some of the very men who have so fervently advocated "look and see" methods, and who accepted and promulgated the view that "when the conditions affecting the agriculture of a region have remained stable for a considerable period local agricultural practice tends to become approximately what it should be for best results,"[137] should not accept the view that the

[137] W. J. Spillman, *et al.*, "Farm Management Practice of Chester County, Pa.," U.S.D.A., *Bulletin* 341 (Washington, 1916), p. 2.

sizes of farms "tend to become approximately what they should be for best results" considering the capacities of the farmers. A comparative study of yields per acre, per cow, per unit of feed, etc., shows that there are wide differences in the quality of the judgments and of the work done by farmers; that is, there are wide differences in the *efficiency* of men as well as in their *capacities*. When all men are assumed to be alike with respect to their efficiency and their capacity, wrong conclusions may be, and have been, drawn from the figures produced by farm surveys.

Furthermore, there will be a difference in the content and in the methods of adult education where it is recognized that differences in financial results are in large measure explained in terms of the characteristics of the farmers and their wives as manifested in their judgment and actions rather than in terms of external factors. The focus will be more definitely upon the farmer and not so exclusively upon the farm. The effort will be to improve farming by improving the "fiber of the man."[138]

When the educators' attention is intelligently focused upon the improvement of the efficiency and the capacity of the farmers, greater progress will be made in improving the soil, the seed and the breed. But it should never be overlooked that the well-being of man is the starting point and the objective point in our research and in our educational program. All else is important only as a means to this end. In the study of the economic efficiency and capacity of man and his improvement in these regards, let it not be forgotten that there are many other values than dollar values which should be given full consideration. These values should be fully considered in deciding whether the farmer should focus his attention more closely upon his work in order to become more efficient and as to whether he should work faster and longer in order to manifest that greater capacity essential to the management and operation of a larger farm, or whether he should give more attention to obtaining the direct satisfactions of a good life.

[138] Cf. *supra*, pp. 153–63.

16.

Cost Accounting Studies

THE PURPOSE OF THIS SECTION is to tell the story of the efforts that were made prior to 1933 to apply the techniques of cost accounting to finding the facts essential to the planning and operation of a farm for maximum profits. Cost accounts were often called for by people who believed that prices should equal costs plus a profit. The relation of cost to prices is discussed at many points in this book, as indicated in the index. That phase of the subject was not in the foreground with the farm economists who did most to promote analysis of farm costs.

Early Experiments in Cost Finding

Various scattering attempts to find the cost of producing farm crops are traceable from the beginning of the nineteenth century. No effort is made here to discuss all of the early work on cost of production studies. Andrew Boss and Merrill K. Bennett have each written historical presentations of the subject.[1] The objectives of cost of production studies have related to prices on the one hand and to efficiency in production on the other.

As early as 1799, John Beale Bordley was advising that if costs were to be determined they should be apportioned between crops in a rotation when fertilizer and cultivation for one crop were partly utilized for the following crop.[2]

As Solon Robinson made his agricultural tours he sometimes collected information on the cost of growing certain crops. An article, dated June 4, 1849, showing cotton cost data gathered during his "extensive agricultural tour the past winter and spring,"[3] was pub-

[1] Andrew Boss, "Forty Years of Farm Cost Accounting Records," *Journal of Farm Economics*, 27(1):1–17 (February 1945); M. K. Bennett, *Farm Cost Studies in the United States: Their Development, Applications, and Limitations*, Stanford University, Food Research Institute, *Miscellaneous Pub.* No. 4 (Stanford University, 1928).

[2] J. B. Bordley, *Essays and Notes on Husbandry and Rural Affairs* (Philadelphia: printed by Budd and Bartram, for Thomas Dobson, 1799), pp. 190–91.

[3] H. A. Kellar (ed.), *Solon Robinson, Pioneer and Agriculturist: Selected Writings*, 2 vols. (Indianapolis: Indiana Historical Bureau, 1936), 2:240–45.

lished in the *Weekly National Intelligencer*[4] and was quoted by Thomas Ewbank, the Commissioner of Patents, in his report for the year 1849.[5] Ewbank commented that Robinson's estimates were "defective and erroneous, but they supply data which will aid in eliciting the truth."[6] Robinson's article stated that he recognized the inadequacy and probable inaccuracy of the data but hoped to encourage others to do better.

The Royal Commission on Agriculture, set up by Queen Victoria in 1879, was concerned with cost of production in the United States of products competing with British production.[7]

In the census of 1880, taken under the direction of Francis A. Walker, an effort was made by Professor William H. Brewer, of the Sheffield Scientific School, New Haven, Connecticut, Special Agent of the Census Office, to determine the cost of producing cereals. A special schedule was prepared and sent to one or more persons in each county with a view to getting the basic facts essential to calculating costs of production. The effort was made to ask questions which would make it possible to calculate costs of preparing the soil, sowing seed, harvesting and preparing products for market.[8] It was hoped that answers to these questions would enable officials of the Census Office to calculate costs per acre of producing each crop. Large numbers of schedules were returned with the desired data, but the results were disappointing. Nevertheless, the experiment provided an analysis of the problem of determining costs of farm production which was recorded in the census report in a form that has continuing value.

Brewer pointed out the wide differences between obtaining costs in manufacturing industries and in agriculture. While the introduction of laborsaving machinery had made agricultural production somewhat more like manufacturing, especially where the one-crop system of wheat growing was practiced, he explained that a significant difference was due to the fact that the manufacturer could predict in advance the amount of product that was to result, whereas, at the time expenses were incurred, the farmer could not predict the quantity of product that would result.[9] Brewer showed further that it is in mixed farming that agriculture differs most widely from manufactures:

> The success of mixed farming depends upon this adaptability, [of its methods and its products under the pressure of western competition] and the profits of each farmer must be measured by the general result of his business, as a whole, for a number of years, rather than by the success of

[4] *Weekly National Intelligencer* (June 9, 1849).
[5] U. S. Commissioner of Patents, *Report*, 1849 (Washington, 1850), Part 2, pp. 309–12.
[6] *Report*, p. 312.
[7] Great Britain. Royal Commission on Agriculture, 1879. *Preliminary Report from Her Majesty's Commissioners on Agriculture* (London, 1881). In House of Commons, Sessional Papers, 1881, Vol. 15, [C.–2778], p. 17.
[8] W. H. Brewer, "The Cereals," U. S. Census Office, *Report*, 10th Census, 1880 (Washington, 1883), 3:429–32.
[9] Brewer, "The Cereals," p. 435.

any one crop for any one, or even two or three years. No crop is profitable every year; each fails from time to time; and so the profitableness of any one can only be determined from the results of a series of years. A farmer in New York, Pennsylvania, Ohio, or Illinois, who grows three or four cereals, has green crops as well as grain crops; raises some cattle, hogs, sheep, and horses; has poultry, an orchard, and a garden; whose sons work in the field while the wife and daughters work in the house, finds it practically impossible to tell exactly how cheaply he can grow wheat or corn from the experience of any one, two, or three years, although he may have a general idea of the cost as a whole; and when from any cause a crop becomes unprofitable, whether from changes in the soil, new liabilities to accident, or change in the markets, he drops it out of cultivation. But this change comes about gradually, and, owing to the adaptive nature of the vocation, he slowly changes his crops and his methods, and thus the business, as a whole, goes on successfully. The different crops are so correlated, and the nature of the industry is such, that the cost of each one separately cannot be specially stated, nearer than to say that during a series of years the cost of production has been a little less than the average market price of that crop in that place during those years. The actual cost of each one varies from year to year, considered by the acre, and still more so by the bushel, and each year probably some one has cost more than its selling value. If for any cause one crop becomes unusually remunerative in any place, its cultivation rapidly extends, until prices fall or lands increase in value and a new equilibrium is restored; if, on the other hand, it becomes unprofitable, it drops out of cultivation only after it has been demonstrated by the experience of a number of years that neither directly nor indirectly does its cultivation pay as a whole. But this never takes place suddenly, because no one or two or three years can settle the question, and in any region of mixed farming the relative areas put into the several crops are continually adjusting and readjusting themselves to each other . . . .

. . . The real difficulty lies in the correlation of the crops. We cannot tell how much of labor, of manure, or expense actually goes to each crop, and, consequently, two neighboring farmers, both successful men in their business, may make very different estimates of the relative cost of raising a given kind of crop, and yet come to the same general conclusion in the end as to whether it will pay to continue its cultivation.

For example, the farm-yard manure is hauled upon a cornfield, and if the cost of this be charged to the corn crop, then the crop which follows the corn, and which actually shares in the benefits of the manure, gets undue advantage in the estimate of the cost of its production . . . .

. . . it often happens that a minor crop is cultivated where the direct ledger account, year by year, would not show it directly profitable, and yet it may be so related to other crops, or to some want of the farm, that it is of indirect value in average years, and in exceptional years fills an important place . . . .

Again, during most of our history as a country, and especially during the last thirty years, most of the grain farms have been rising in value. In the newer sections of the country a farmer going on cheap lands, did he merely live by his live-stock and his crops, still might acquire wealth by the rise in the value of his lands. This most important element is left out in nearly all the estimates of cost and profit in grain production. In a new country the profits arising from this are for a time equal to those which result from the crops themselves . . . .

Again, the relative exemption of crops from accident and casualty is another item whose value can only be determined from the experience of a series of years. This factor, so often lost sight of in making estimates of cost,

is really so important that it may determine the whole agricultural character of a country, and is one reason why we cannot predict whether the growing of any crop in an untried region will be successful for any considerable number of years or not. That question can only be settled by the test of actual experience, because so many conditions are involved over which the cultivator has either no control whatever, or but partial control, and the results of which he cannot foresee. Success in one year is no proof of reasonably permanent success, and the cost of production of any crop in any particular year is but a poor indication of the average cost of that crop for any considerable number of years . . . .

. . . cost varies with the intensity of production . . . . This principle further complicates the already complicated relationship existing between the different crops, and explains why, in many districts, crops may appear to yield very small returns and yet farming go on prosperously . . . .

The vagueness of statements, the conflicting estimates, the uncertainties of cost, therefore, are inherent in the business. It is practically impossible to estimate the cost of separate crops more exactly than in the general way indicated.[10]

In 1891 Thomas F. Hunt, in connection with teaching his class in rural economics, worked with a tenant farmer in making "a careful estimate of the cost of producing crops on a farm of 130 acres in central Pennsylvania, the rotation being corn, oats, wheat, and clover."[11] After discussing the cost of producing livestock, Hunt said: "My purpose here is simply to suggest how many-sided the problem of keeping various classes of domesticated animals is from an economic standpoint."[12]

The low prices which farmers received for their products in the 1890's aroused considerable interest in the cost of producing their products. In early 1893, the agricultural experiment stations of Texas and Nebraska published studies on the cost of production of staple crops in their states.[13] In the same year experiments were begun that were intended to determine the cost and profit of raising wheat in Wyoming.[14]

In March 1894, Henry A. Robinson, Statistician of the U. S. Department of Agriculture, published estimates of the cost per acre of raising wheat and corn. In his introductory statement Robinson said:

In consequence of numerous inquiries relative to the cost of raising our principal cereals coming from both this country and abroad, a careful investigation has been made by the Department of Agriculture as to the cost of raising the staple products, corn and wheat. In view of the present low prices of wheat prevailing throughout the world, the results of this investigation are of unusual economic importance, and it is believed that the

[10] Brewer, "The Cereals," pp. 436–38.

[11] T. F. Hunt, *Lectures on the History of Agriculture and Rural Economics* (Columbus: Shepphard & Co., 1899), p. 137.

[12] Hunt, *Lectures,* p. 143.

[13] G. W. Curtis and J. W. Carson, "Cost of Cotton Production and Profit per Acre," Texas Agr. Exp. Sta. *Bulletin* 26 (College Station, 1893); C. L. Ingersoll and S. W. Perin, "The Cost of Farm Crops," Nebraska Agr. Exp. Sta. *Bulletin* 29, 6:35–42, Art. III (Lincoln, 1893).

[14] B. C. Buffum, "Cost and Profit of Growing Wheat," Wyoming Agr. Exp. Sta. *Bulletin* 17, Sec. 2 (Laramie, 1894). For continuation of this experiment, see *Bulletins* 22 and 25, published in 1895.

time has come to sound a note of warning against the exclusive dependence on these crops, and in favor of a more diversified culture. With wheat selling at 57 cents and corn at 36 cents a bushel in Chicago, it is impossible to escape the conclusion that a rotation of crops would be more profitable to our farmers than a persistence in exclusive wheat growing.

The subjoined tabular statement will show that his time and the interest on the money invested in his land have been included in the actual expense incurred by the farmer in the production of his crops. The following items have been considered in making an estimate of the total cost of raising wheat: Rent of land, manure, seed, and labor, the last of which is subdivided into preparation of soil, sowing, harvesting, thrashing, housing, and marketing. In the case of corn, the labor consists of preparing the soil, planting, cultivating, gathering, housing, and marketing.

Cost per Acre of Raising Wheat and Corn

	Wheat	Corn
Rent of land	$ 2.81	$ 3.03
Manure	2.16	1.86
Preparing ground	1.87	1.62
Seed	.96	.....
Sowing or planting	.37	.42
Cultivating	.....	1.80
Harvesting or gathering	1.19	1.22
Thrashing	1.20	.....
Housing	.37	.50
Marketing	.76	1.26
Total	$11.69	$11.71

In the Statistician's report for December, 1893, the average farm value of wheat and corn produced per acre was stated as follows: Wheat, $6.16; corn, $8.21. This would show on the face of it a virtual loss to the farmer of $5.53 per acre of wheat and $3.50 per acre of corn for the year 1893. It must be remembered, however, that besides the production of the grain the farmer has the straw of the wheat and the stalks of corn, which have in some sections of the country a feeding value of about $5 per acre, and that while the cost of production was about normal the price per bushel of wheat was unprecedentedly low and that of corn much below the average.

The fact that the farmer is allowed average rent for his land, and wages for his labor, in the above calculation, should also be taken into consideration in computing his profits.

The results have been derived from individual estimates made by over 25,000 practical farmers in the case of wheat and over 28,000 in the case of corn. A second set of replies was received from over 4,000 experts, i.e., the graduates of various agricultural colleges now engaged in farming, and this result tallies very closely with that obtained from the general inquiry.[15]

That report shows detailed figures by states which indicate a range in the average costs per acre of wheat in the various states from $8.57 in South Dakota to $26.34 in Connecticut with a national average of $11.69 per acre.

[15] U. S. Department of Agriculture, "Expense of Raising Wheat and Corn," *Report of the Statistician* for December 1893, n.s., No. 113 (Washington, 1894), pp. 106–07.

The publication of that report set off a discussion in the agricultural press on the cost of producing wheat which lasted many months, as indicated by contributions to the *Cultivator and Country Gentleman*. In one of the first of the series of statements in that paper, found in the issue of June 21, 1894, the statement of the statistician of the U. S. Department of Agriculture was briefly summarized and commented on as follows:

> . . . The principal items of cost have remained about normal during the past four or five years, being slightly higher where any change is noted, owing to increase of cost of labor during the prosperous times from 1890 to 1893. During that period, however, the price of wheat fell nearly one-half. As a result, either wheat production must be restricted or a large part of it must be done at a loss.[16]

In the November 8, 1894 issue, a letter from J. R. Dodge stated:

> It has often been asserted in recent years that the cost of growing wheat is greater than the price received. The prophecy has been made, for this reason, that the area cultivated must decline. Still it is grown, and sold—at a loss? It is not easy to determine the average cost, and there is a liability that the statement of cost may be too high.[17]

An article in the *Prairie Farmer* laid emphasis upon the fact that the introduction of the twine binder and the lowering of railroad rates had lowered the cost of producing and marketing wheat and thus had resulted in a great expansion of wheat growing in the areas of low cost.[18]

B. W. Snow came forward with a criticism of the figures of the U. S. Department of Agriculture on the cost of growing wheat and substituted $4.00 for the government figure of $11.69. In doing so he left out rent of land and allowed only fifty cents a day for "regular farm help."[19]

That article brought out a series of protests and individual statements of cost, all of which have little value except to show the public interest in cost of production figures at that time. The interest was lively and widespread and found many expressions. C. E. Thorne discussed the relative cost of beef and butter,[20] and W. D. Hoard discussed methods of decreasing the cost of producing dairy products by wise selection of cows and more intelligent handling of the dairy.[21]

The *Orange Judd Farmer* undertook an ambitious project. Farmers in eight corn states were asked to keep exact cost records on cost of producing corn. B. W. Snow tabulated and analyzed those

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[16] "Cost of Wheat Production," *Cultivator and Country Gentleman*, 59:472 (June 21, 1894).
[17] Letter of J. R. Dodge, "The Cost of Producing Wheat," *Cultivator and Country Gentleman*, 59:803 (Nov. 8, 1894).
[18] "Wheat-Growing in the United States," *Prairie Farmer*, 66(34):2 (Aug. 25, 1894).
[19] Letter of B. W. Snow, "Some Estimates of Wheat Cost," *Cultivator and Country Gentleman*, 59:927 (Dec. 27, 1894).
[20] C. E. Thorne, "The Relative Cost of Beef and Butter," Stock Breeders' and Farmers' Institute, *Proceedings*, 1894, in Ohio State Board of Agriculture, *Annual Report*, 1893 (Norwalk, 1894), pp. 326–32.
[21] W. D. Hoard, "The Necessities and Demands of Modern Dairying," Massachusetts State Board of Agriculture, *Annual Report*, 1895 (Boston, 1896), pp. 93–121.

records and published a series of nine articles in the *Orange Judd Farmer* in 1897.[22] The conclusion drawn from that study placed cost of producing corn in 1896 at as low as six cents per bushel, but did not consider rent or interest as items of cost.

The University of Illinois published figures in 1898 on the cost of production of corn and oats in Illinois in 1896.[23] The U. S. Department of Agriculture sent out circulars requesting planters to estimate costs per acre of cultivating and marketing cotton in 1896. In 1899 the results of that investigation were published.[24] The first fruitful effort by an agricultural college to go directly to the farmers for accurate detailed records year after year was the establishment of the cost accounting routes by the Minnesota Agricultural Experiment Station in 1902. That work was an outgrowth of the research and experimental work of Willet M. Hays and Andrew Boss during the years 1893–1901.

Cost Accounting at Minnesota

The Minnesota Agricultural Experiment Station, in co-operation with the U. S. Department of Agriculture, has conducted detailed cost accounting studies continuously from 1902 on, with the exception of the interruption due to the war in 1918 and 1919.[25] The results have been published from time to time.

Andrew Boss, who was in general charge of the work, had faith that the cost studies would contribute to an understanding of the economics of farm management. Carefully, patiently, earnestly, steadfastly, the work was carried on year after year. The entire objective as laid down in the original plan could not be attained at once, but step by step the methods were improved and little by little results secured. The work progressed from finding costs in terms of money to finding costs in terms of units of labor and materials, from cost elements to seasonal labor demands of the various enterprises. Then came planning for the future on the basis of the elements of cost, probable yields, and prospective prices in the markets, and finally an effort to understand the influence of differences in qualifications of farmers themselves in determining the variations in financial results obtained by farmers operating under comparable conditions.

As a 45-year undertaking, carried on by a succession of men in immediate charge of the work, the results are impressive. While there were many changes in personnel, both in Washington and in Minnesota, one man, Andrew Boss, was the common denominator

[22] B. W. Snow, "Cost of Growing Corn Actually Determined," *Orange Judd Farmer*, 23:52–53 (July 17, 1897); p. 76 (July 24); p. 100 (July 31); p. 124 (Aug. 7); p. 148 (Aug. 14); p. 172 (Aug. 21); pp. 196–97 (Aug. 28); p. 218 (Sept. 4); p. 242 (Sept. 11, 1897).

[23] N. A. Weston, "The Cost of Production of Corn and Oats in Illinois in 1896," Illinois Agr. Exp. Sta. *Bulletin* 50 (Urbana, 1898).

[24] J. L. Watkins, "The Cost of Cotton Production," U.S.D.A., Division of Statistics, *Miscellaneous Series Bulletin* 16 (Washington, 1899). Prepared under the direction of John Hyde, Statistician.

[25] Time of this checking: 1948. In this book, the development of that work is followed only into the early 1930's.

throughout the period. To him must be given special credit for the steady progress of the work through the years. One by one he chose competent men to carry forward the undertaking. Those in immediate charge of the work were always close to Boss, who inspired them and steadied their gait. Boss worked with Willet M. Hays in planning and organizing the route method of gathering facts from farmers. Hays provided the vision and the driving force to begin the work. Boss's steady hand and persistent purposefulness carried it through, maintained the high quality, and kept it in line with the initial objectives while directing it toward new goals which came into view with the progress of the work.

A contemporary record of what Hays had in mind when he started to work on the subject has not been found. Boss, who was closely associated with Hays from the beginning, has made the following statement:

> When W. M. Hays returned to Minnesota from North Dakota in the fall of 1893, he brought with him the idea of studying the cost of production of crops in connection with crop rotation studies to be made at the experiment station farm. During the winter of 1893–94, Hays in collaboration with Andrew Boss, then Assistant Agriculturist of the Minnesota Station, perfected a plan for a group of forty-four one-tenth acre rotation plots on the station farm which were to serve as a basis for discovering the best paying systems of crop rotation and, at the same time, for studying the effect of the various rotations on soil fertility. These forty-four plots contained rotations running from continuous cropping through the two, three, four, five and seven year rotation cycles . . . . At the end of the first five-year period, the conclusion was reached that this study was abortive and that it would not yield the desired information on the cost of crop production . . . . While these rotation plots served a useful purpose in studying the effect of rotation on the land, they proved to be entirely useless as a base for measuring relative costs of production.
>
> During the years 1894-99 and in connection with the work on rotation plots, Hays and Boss were developing courses of instruction in farm development and in farm crops to be taught in the School of Agriculture to young men from the farms of the state and who were expecting to return to farming. Here again the need was felt for information about relative profits on crops usually grown on Minnesota farms as affecting the returns to the farm as a whole. The desire was to find the crop or crops that could be most profitably grown and combined in rotation on the farms operated by the families of the students in the classes . . . . The conclusion was reached that if results of value were to be obtained concerning the cost of producing farm crops, the basic data for analyzing the problem and setting up sound farm management practices must be obtained directly from the farmers. Hays and Boss then set about the task of developing a method of getting such data from the farmers and of recording and analyzing the data. The next two years were spent in planning the attack and in finding financial support for what proved to be the first organized attempt to learn the relative costs of producing various farm crops.[26]

[26] See W. M. Hays and E. C. Parker, "The Cost of Producing Farm Products," Minnesota Agr. Exp. Sta. *Bulletin* 97 (St. Anthony Park, Ramsey County, 1906). Also published as U.S.D.A., Bureau of Statistics, *Bulletin* 48 (Washington, 1906).

See also W. M. Hays, A. Boss, A. D. Wilson, and T. P. Cooper, "Farm Management: Organization of Research and Teaching," Minnesota Agr. Exp. Sta. *Bulletin* 125 (University Farm, St. Paul. 1912). Also published as U.S.D.A., Bureau of Plant Industry, *Bulletin* 236 (Washington, 1912).

During the summer of 1901, Hays who was a traveling missionary for the cause, had interested Victor H. Olmsted, Chief of the Bureau of Statistics, U.S.D.A. at Washington in an investigation of the costs of producing crops . . . . With assured assistance from the Bureau of Statistics, Hays and Boss decided to establish so-called statistical routes at three points in the state where farm cost data would be recorded from farms in active operation by farmers. In September of that year, they set out by team and platform spring wagon for Northfield, forty miles away in the heart of a good dairy farming area to solicit cooperation of farmers in providing reports of the daily transactions and activities connected with crop growing on their farms. The objective was to find fifteen farmers who would willingly report the details of every labor activity on the farm connected with crop growing and the details of financial transactions in connection with their production. Four days were required to complete the mission. Something over fifty farmers were interviewed before fifteen cooperators were found within what was considered to be a reasonable limit for a day's drive for a route man with horse and buggy. The plan of investigation called for placing a route man on the job who would visit each farm daily to pick up recorded reports or to interview the farmers and record data which were not readily available . . . .

A similar expedition was made by Hays in the vicinity of Marshall in Lyon County to find cooperators at that point. The agriculture of Lyon County at that time was thought to represent a diversified farming area. Another route was established at Halstad, Minnesota in the Red River Valley which, at that time, represented a highly specialized crop production area with wheat the leading crop. The thought was that from the route at Northfield in Rice County representing the dairy type of farming, the one at Marshall, Lyon County, representing diversified farming and the one at Halstad in Norman County representing grain farming, data would be secured from which there would be no difficulty in telling what types of farming would be most suitable and most profitable in any part of the state.

On January 1, 1902, the Minnesota Agricultural Experiment Station in cooperation with the Bureau of Statistics of the United States Department of Agriculture began gathering data on the established routes. The work was directed entirely from the Minnesota Station with the expense being divided about equally between the Station and the Bureau of Statistics. Three young men who had been college students at Minnesota took leaves of absence from their college work to become route statisticians and gather the data from the fifteen farmers on each route who had been selected as farm cooperators.[27]

With this picture of the initiation of the Minnesota system of farm cost accounting in mind, attention may be turned to the kinds of results Hays expected to get. A search for correspondence between Hays and Olmsted about the project has been fruitless. A statement which indicates the objectives that Hays had in mind in 1906 is in the first publication of results of that project. It is probable that the objectives had been clarified and enlarged between 1901 and 1906. The statement, written, or at least inspired, by Hays, as joint author with Edward C. Parker, who was responsible for the cost data, reads:

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[27] A. Boss, "Forty Years of Farm Cost Accounting Records," *Journal of Farm Economics*, 27:3–6 (February 1945).

. . . In order to determine the values of certain arrangements or rotations of field crops, it is necessary that the cost of production be known . . . .

From the standpoint of agricultural economics the study of crop rotation and cost of producing field crops should be accurately carried out in their relation to the law of diminishing returns—that cost of production beyond which increasing applications of capital and labor fail to yield a proportionate return. What amount of labor and machinery values can be applied to the soil that will yield the greatest proportional profit? Would a $10 application of labor and capital to an acre of land yield a greater proportional profit in wheat than the average application of $6? And would an application of $15 per acre yield a larger proportional profit in corn than the average application of $10? Deductions from long-time investigations of this sort would undoubtedly be of practical value in the business of farming.

Cost of production and market conditions are the basis from which all study of methods should be made in agriculture as well as in other industries. Knowing these facts, the adaptability of various crops to economic production on various soils and in various climates may be ascertained. The difference between the cost of producing a crop and the value of the gross product indicates to the practical farmer the correctness or incorrectness of his methods as well as the adaptability of the crop to his soil and to his needs. The same method of analysis holds true in the production of beef, pork, and milk.[28]

In speaking of the objectives of the Minnesota cost accounting project, Boss said, in 1945:

. . . the effort was not made to find costs for costs' sake or with the expectation of determining an exact cost to be used in price making. Rather the objective was to secure basic data at first hand that could be used in determining which crops under certain conditions gave the greatest net profits when grown for market and which crops could best be worked into farm crop rotations that, over a period of years, would yield the best returns to the farmer. Item 10 of the summary (To assist the farmer to so organize his business that such arrangement of crops and livestock may be made as will give the largest net returns.) brings out this thought clearly. The whole

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[28] W. M. Hays and E. C. Parker, "The Cost of Producing Farm Products," Minnesota Agr. Exp. Sta., *Bulletin* 97 (St. Anthony Park, Ramsey County, 1906), pp. 21–22. Also published as U.S.D.A., Bureau of Statistics *Bulletin* 48 (Washington, 1906).

In a letter to H. C. Taylor, Aug. 1, 1946, Andrew Boss discussed his memory of the co-operative writing of *Bulletin* 97 as follows: "As nearly as I can call to mind Parker began compilation of the tables in the summer of 1905 after Hays had gone to Washington. He continued in that work until the winter of 1906. Then, in consultation with Hays, the outline of the bulletin was built up. Parker, Hays, and myself participated in making this outline and in discussing the general objective of the bulletin. From that time on Parker began to write the text. I recall distinctly many discussions with him and others regarding the economic phases of the research. I am quite sure that Hays spent quite a bit of time in the summer of 1906 at University Farm with Parker and me in editing and discussing the text."

In a letter to Andrew Boss, Aug. 15, 1946, T. P. Cooper set forth his memories of the writing of *Bulletin* 97 as follows: "Hays returned to Minnesota for a part of the summer to prepare this publication. . . . He brought with him the manuscript — very discursive and very long. . . . Parker . . . rewrote a larger part of the material which Hays brought, condensing and in a few instances making additions. . . . The rewritten manuscript then became the subject of discussion, primarily carried through by Hays and Parker. I had the opportunity of listening in and occasionally participating in the many arguments which developed. . . . The first manuscript contained some of the philosophy included in the pages to which you refer [9 to 22]. . . . The tables in the latter part of the manuscript, from 42 to 53, were all prepared in final form by Parker. There was much discussion about them because they brought up new viewpoints which were not generally accepted by farmers or by most of the dairy interests. . . . Constantly through the discussions, the idea occurred that this publication was setting up basic concepts of the economics of agriculture. . . . On the whole, I think a fair statement would be that the preliminary concept was prepared by Hays and that it was developed and put into form primarily by Parker, with such small contributions as the others could render."

enterprise was aimed at better farm organization, improved farm operation and the development of information that would be useful in teaching school and college classes in farm management and to build up literature on farm management.[29]

Measured against those objectives, to what extent does the 1906 report show the results which Hays and Boss hoped for? That report, giving the results of the first three years of the cost studies, presented the cost per hour of man labor, the cost per hour of horse labor, the cost of machinery per acre, and the cost per acre of producing field crops. Only about half of the bulletin was used in presenting results of the cost accounting project. The other half assembled farm management and feeding data from other sources. Twenty-two tables are given showing the cost of production of 14 crops. Corn, flax, and oats costs were given under various methods of production or harvesting.

The comparison of the relative profitableness of the different crop combinations and rotations, on the basis of costs of production and market prices, which Hays had set forth as a primary objective, was not undertaken at that time. However a start was made in applying the findings to answering other questions which were continually arising. One of those questions was: Does it pay better to stack and stack-thrash or to shock-thrash wheat, oats, and barley? The findings on the cost routes were used in working out an answer to that question.[30] The accounts showed that it cost 2¾ cents a bushel more in the case of wheat and 1.1 cents more in the case of barley to stack-thrash than to shock-thrash. But it was pointed out that the sale value of the grain was higher in the case of stack-thrashed grain and the conclusion was drawn that:

> . . . for a majority of Minnesota farms producing grain under the prevailing conditions of climate, availability of labor and machines, stacking and stack-thrashing of grain is better farm management than shock-thrashing. This is particularly true of all grain intended for seed.[31]

Another question for which an answer was given related to which forage crops to grow:

> In growing such field crops as clover, timothy, and fodder corn, which ordinarily have no market value and must be marketed in livestock products, preference should be given to the crop that, under the given conditions, will yield the largest money value in digestible nutrients per acre above the expense for production. Good principles of farm management will modify this statement somewhat from the fact that soil fertility, eradication of weeds, etc., demand crop rotation, and in the long run it is better management to grow several classes of forage crops in the rotation than to grow one forage crop continuously.[32]

In order to compare the relative profitableness of the forage crops, the cost figures gathered by the route statistician were used in con-

[29] Boss, "Forty Years of Farm Cost Accounting Records," *Journal of Farm Economics*, 27:10.
[30] Boss, "Accounting Records," pp. 55–60.
[31] Boss, "Accounting Records," p. 60.
[32] Boss, "Accounting Records," p. 60.

junction with T. L. Haecker's calculated feeding values of forage crops.[33] The conclusion reached was:

> . . . From a purely business standpoint these investigations show that cheap forage in the form of well-cured clover and timothy, alsike, alfalfa, and bromus will return larger profits from a given area of land under average conditions in the Middle West than either fodder corn or ensilage. Certain conditions, previously cited, modify this statement, but, with the present size of farms in the Middle West, with the present average distances from markets, and the present types of dairy and beef cattle that are being fed by the majority of farmers, cheap forage, such as clover and timothy hay, is to be considered the most profitable roughage.[34]

Still another question on which the report endeavored to throw light related to the shredding of corn stover. The conclusion was that "shredding corn stover is poor, and not good, farm economy."[35]

Thus, while that bulletin did not attain the goal set by the founders of the project, it made progress in that direction.

In 1910 another report on the cost of production project, covering the years 1902–1907, was published under the authorship of Edward C. Parker and Thomas P. Cooper.[36] That report covered the same crops and added hemp and clover cut for seed. It also added a computation of the cost of feeding and cost of caring for milk cows and other livestock.

In 1911 Thomas P. Cooper presented the cost of Minnesota dairy products for the years 1904 to 1909. In describing that phase of the project Cooper said:

> Previous to 1904 the principal object of the investigation had been to obtain the cost of grain production, but since that time production of all classes of farm products has been studied and an endeavor made to ascertain costs and formulate methods of determining them. Since 1904 an accurate book account of each farm has been kept with the object of recording detailed statistics of costs and of the profits or losses arising from each enterprise of the farm and from the farm as a whole. The data in this bulletin embody detailed statistics of the dairy enterprise, as segregated from all other enterprises on the farm.
>
> From eight to ten farms were selected in each community as representative of average conditions in their respective localities, to co-operate in this work, the purpose being to co-operate with farmers who cared for their stock by the usual methods rather than to select exceptionally successful men who were more progressive than the average farmer.
>
> A "route man," employed as a special agent, was stationed in each community and visited each farm therein daily, obtaining a complete report as to the number of hours of man and horse labor spent on every operation in the various farm enterprises, the amount of sales and expenditures, and all items relative to crop or live stock production.
>
> Land, live stock, machinery, feed, grain, and all forms of farm equipment were inventoried at the beginning and close of each year so that all cost

[33] Boss, "Accounting Records," p. 62.
[34] Boss, "Accounting Records," p. 76.
[35] Boss, "Accounting Records," p. 80.
[36] E. C. Parker and T. P. Cooper, "The Cost of Producing Minnesota Farm Products, 1902–1907," Minnesota Agr. Exp. Sta. *Bulletin* 117 (University Farm, St. Paul, 1910). Also published as U.S.D.A., Bureau of Statistics *Bulletin* 73 (Washington, 1910).

and depreciation could be accurately determined. Parts of three days out of every month were spent by the route man on each farm, during which period the grain and roughage fed to each class of live stock was weighed and the milk of each dairy cow weighed and tested. The data as to weight of feeds and products are therefore based upon weights taken three days each month. In other words these weights have been used as a basis for determining the quantities fed and produce used for the entire month. To guard against error this has been checked by inventories of feed and cash purchases and by accurate records of sales and of farm produce used in the household.

By this method every detail of expense and receipt of the farm is recorded, and each enterprise thereon has received its proper credit or charge.

A simple double entry system of accounts has been kept for each farm, which is balanced at the end of each calendar year. All work has been supervised from the Minnesota Experiment Station, and the accounts kept there.[37]

Labor and feed costs of keeping cows, the cost of milk per hundred pounds, and the cost of butterfat per pound are all shown. Not only the costs and receipts of the dairy enterprise, but also the economic position of the dairy in relation to the farm as a whole, were discussed. That bulletin represented a distinct step ahead in the thinking on cost work in relation to the problems of farm organization and management, but left very much to be done before fully reaching the goals set forth by Willet M. Hays in initiating the project.

Before carrying further the story of the Minnesota project on detailed cost accounting (p. 415), attention will be turned to the thinking and the work in this field at Ohio, Illinois, Wisconsin, and Cornell.

Cost Accounting, Ohio

In Ohio, in 1905, L. H. Goddard, of the Agricultural Experiment Station, initiated the correspondence method of detailed cost accounting, including labor records. Farmers who had graduated from the agricultural course at Ohio State University, and others who wished to carry on experiments on their farms, were members of an organization known as the Agricultural Students' Union. Working with that group was a primary function of the Experiment Station's Department of Cooperation, established in 1904 with L. H. Goddard as Chief. Goddard began in 1905 to help the members of the Union with the keeping of detailed records of their farming activities. He was assisted by O. M. Bugby from 1905 to 1909, after which he was assisted by W. L. Elser. The method used differed from the Minnesota system primarily in the fact that the route method was not used. The farmers sent in their records by mail. A representative of the experiment station helped survey the farms, helped take the inventories, and visited each farm a few times each year to help with the record keeping. The posting of accounts and records was done by the Experiment Station.

[37] T. P. Cooper, "The Cost of Minnesota Dairy Products, 1904–1909," Minnesota Agr. Exp. Sta. *Bulletin* 124 (University Farm, St. Paul, 1911), pp. 91–92. Also published as U.S.D.A., Bureau of Statistics, *Bulletin* 88 (Washington, 1911).

In 1907 the U. S. Department of Agriculture, Office of Farm Management, entered into co-operation with the Ohio Agricultural Experiment Station in jointly conducting the study and preparing the bulletin on the labor cost of producing corn. That bulletin was based on labor records kept by co-operating farmers in 23 counties extending over a period of seven years.[38]

In keeping the record of the man labor and horse labor expended on the production of corn, the following items were kept separate: Fertilizing (which included the time required in hauling manure as well as in applying commercial fertilizers), care of seed, preparation of seedbed, planting, cultivating, harvesting, miscellaneous labor, general farm labor, each item being designated as a partial item.

The bulletin shows the labor requirements per acre of corn and compares the requirements per acre on fields of varying sizes, and also on fields of different shapes. A greater quantity of labor was required on small fields. In some instances there was less horse labor but much more man labor expended per acre on the small fields. The labor costs were compared for the different methods of harvesting. A special study was made of the cost per acre of harvesting crops of varying yields per acre. The labor cost of harvesting corn per bushel varied inversely with the yield, but the cost per acre was slightly larger for the higher yields. The bulletin states:

> . . . The average yield of 87 of the 108 fields under consideration was 48.13 bushels per acre. Forty-four of these fields produced less than this, or an average of 36.57 bushels per acre, while 43 fields produced an average of 59.38 bushels per acre. . . . the total labor cost of the 43 fields having the average yield of 59.38 bushels per acre is but 50 cents per acre more than that of the 44 fields averaging only 36.57 bushels per acre, thus making the labor cost per bushel very much lower for the 43 fields having the higher yield.[39]

One table in the bulletin shows the number of bushels of corn per acre necessary to pay the labor cost of production at various costs and prices per bushel, no credit being allowed for value of stover.[40]

The bulletin contains nothing about seasonal distribution of labor requirements, but does contain an ingenious table[41] showing the labor cost per acre at varying prices per hour for man and horse labor.

Of course when changes took place in the basic labor requirements due to technical changes in the methods of production, the tables would be obsolete unless, and until, new tables were made on the basis of the new labor requirements.

In 1913 Goddard accepted a call to enter the service of the U. S. Department of Agriculture, and the Ohio Agricultural Experiment Station at Wooster had no one in charge of farm management research for a dozen years, or until John I. Falconer, Professor of Rural

[38] L. H. Goddard and W. L. Elser, "Labor Cost of Producing Corn in Ohio," Ohio Agr. Exp. Sta. *Bulletin* 266 (Wooster, 1913), p. 85.
[39] Goddard and Elser, "Labor Cost," p. 117.
[40] Goddard and Elser, "Labor Cost," p. 99.
[41] Goddard and Elser, "Labor Cost," p. 98.

Economics at the Ohio State University at Columbus, was asked, in 1925, to serve also as Chief of the Department of Economics at the Experiment Station.[42]

In the meantime the Ohio State University had continued its interest in the economic aspects of farming which had been aroused by Thomas F. Hunt in the 1890's. In 1922–23, the Extension Service of that University published a bulletin on labor requirements which was based on interviews.[43] That bulletin indicated the relative amount of labor required in performing given functions, such as plowing, planting, cultivating, harvesting, hay loading, manure hauling, etc., with various sizes and varieties of farm equipment. That bulletin did not, however, include the facts showing the seasonal distribution of labor requirements on the different crops grown on the same farm.

Illinois Introduced the Minnesota System

Detailed cost accounting by the Minnesota route method has been carried on continuously by the Illinois Agricultural Experiment Station since 1912, at which time the Department of Animal Husbandry employed W. F. Handschin, trained at the University of Minnesota College of Agriculture, to carry on cost studies. By 1917 Handschin's work had so developed that a Department of Farm Organization and Management was created. Handschin was made head of that department, and the cost accounting work which he had in hand was transferred with him from the Department of Animal Husbandry to the new department. The Department of Dairying also carried on cost accounting work from 1912 to 1924.

After Handschin's death in 1922, H. C. M. Case was put in charge of the work in farm management. In 1932 that work was associated with the work in agricultural marketing and land economics under the departmental title of Agricultural Economics with Case as head of the consolidated department. Through all of those changes in the administrative organization under which it functioned, the detailed cost accounting work has been carried on in line with the general objectives Handschin had in mind when the work was started in 1912[44] with readjustments in detail to meet the requirements arising from changes in the enterprises and in the techniques of production.

In addition to the detailed cost work, the leaders in agricultural economics at Illinois have shown originality and unusual initiative in their methods of arousing interest on the part of farmers in keeping and making use of farm records and accounts. Case, as Assistant Farm Management Demonstrator, 1915–17, as Assistant State Leader of

[42] Letter from J. I. Falconer to H. C. Taylor, Oct. 22, 1946.

[43] R. F. Taber and C. R. Arnold, "The Labor Required for Crop Production in Ohio," Ohio State University, Agricultural Extension Service *Bulletin,* Vol. 18, No. 5 (Columbus, 1922–23).

[44] R. H. Wilcox and H. C. M. Case, "Twenty-Five Years of Illinois Crop Costs, 1913-1937," Illinois Agr. Exp. Sta. *Bulletin* 467 (Urbana, 1940), p. 359.

Farm Advisers, 1917–19, in Illinois, and as federal employee in charge of farm management extension in northern and western states, 1919–21, took the lead in effectively introducing account books. They have, in a large measure, replaced the farm survey method of securing the facts for making farm business analyses by the extension worker.

In 1925, under the leadership of Case and M. L. Mosher, Illinois started the Farm Bureau – Farm Management system of supervised farm accounting. In that system the farmers share the expense of the service. The work has expanded continuously. In no other state have the farmers generally become so conscious of the importance of farm records as a help in managing their farms. In no other state are more farmers keeping accounts under supervision and with the aid of the state agricultural college. However, the Illinois Farm Bureau – Farm Management plan is being adopted by other states.

While the Farm Bureau – Farm Management Service was started as an adult education project, it has proved of value as a basis of research. The large number of farm records obtained through that service has value as research material. Evidence of that value is shown in a bulletin on the relative profitableness of different farm practices.[45]

Wisconsin Introduced a Point of View

At Wisconsin the emphasis in cost accounting was on obtaining information essential to making a wise choice between enterprises and between methods of operation. In the winter of 1902 H. C. Taylor was teaching a course in the economics of farm management in connection with which he prepared a syllabus of lectures[46] that contained a statement of principles to be followed in combining enterprises in a system of crop rotation. Tentative conclusions drawn were based upon a study of comparative agriculture rather than upon the facts of cost accounting, but the principles of crop selection and combination, particularly as they related to relative profitableness of competing crops and the combination of noncompeting crops, were fundamental to the gathering of useful cost data and their effective interpretation. At first Taylor was without resources for making cost studies. Therefore he confined himself to general analysis of the subject based upon observation and historical and comparative studies, such as are presented in his study of sugar-beet culture and his first book on agricultural economics.[47]

Opportunity to apply the accounting method to the problem of enterprise selection came in 1908 when William Peck, a representative

[45] M. L. Mosher and H. C. M. Case, "Farm Practices and Their Effects on Farm Earnings," Illinois Agr. Exp. Sta. *Bulletin* 444 (Urbana, 1938).

[46] H. C. Taylor, *Syllabus of Lectures on Agricultural Economics.* (Madison, printed privately for class use, 1903.)

[47] H. C. Taylor, "Conditions Affecting Sugar-Beet Culture in the United States," American Academy of Political and Social Science, *Annals,* 22:179–87 (July 1903); H. C. Taylor, *An Introduction to the Study of Agricultural Economics* (New York: The Macmillan Company, 1905).

from the U. S. Department of Agriculture, Office of Farm Management, agreed to co-operate in making cost studies in Wisconsin with a view to testing and illustrating the principles of crop selection.

That co-operation was informal at first. Peck and Taylor experimented with cost accounting on a few farms by selecting farmers here and there who were interested in cost accounts and asking them to keep daily labor records, feeding records, financial and other accounts, and mail them to the Federal Office of Farm Management in Washington for tabulation. Forms for daily labor records and feeding records used in that experimental work were mimeographed at Wisconsin. In 1909 a formal arrangement was made for co-operation between the Federal Office of Farm Management and the Wisconsin Agricultural Experiment Station.

Taylor had little interest in determining the specific cost of producing each farm product. He was interested, first of all, in securing facts which would show the relative profitableness wherever a choice was to be made. It might be a choice between competing crops, between different livestock enterprises, or the different methods of production. Taylor was particularly interested in getting concrete evidence of the manner in which enterprises could be fitted together in harmony with their seasonal demands in such a way as to utilize the labor resources for maximum profits. As a result of that preliminary thinking and experience with cost studies, Taylor prepared, in 1911, a statement relating to the cost accounting method of studying farm management problems which was published in *Research Bulletin* 16 of the University of Wisconsin:

> Cost accounting is a method of ascertaining such facts regarding the operation and results of a business as will enable the operator to know what to produce and how to produce it in order to secure maximum profits from the business. . . .
>
> The one who plans the records and their tabulation must have a clear vision of economic forces if he would plan a successful system of accounts, for economic forces determine what should be done on the farm. The system of accounts must show quantitatively the workings of these forces at a given time and place. . . .
>
> The problem of first importance in the organization of a farm for profit is that of correlating a group of enterprises upon one farm in such a manner as will keep the labor and equipment employed as nearly continuously as practicable and in that enterprise which will yield the largest returns of all those which can be carried on at the given time of year.
>
> It is a matter of common knowledge that the production of a crop of corn does not require labor continuously throughout the year. The same is true of oats and it happens that the nature of these plants is such that oats can and must be sown earlier than corn, and that oats require no further attention until after the corn has been planted and cultivated. The harvesting and threshing of the oats are or can be over before the corn is ready to be harvested. These crops are, for these reasons, said to be complementary.
>
> Corn is not the only crop which requires attention at the given time of year. In some regions, tobacco and corn are both open to the farmer's choice. Some places the sugar beet is an alternative, in others, cotton. Likewise, the

farmer has a choice of several crops in the seasons when oats are sown and harvested. Barley and spring wheat will suggest themselves as alternatives to oats in certain regions. The crops which require attention at the same time of year are said to be competitive.

It is obviously to the farmer's interest that he select from each group of competing crops the one which will add most to his net income. It is equally clear that he will desire to combine as many complementary enterprises as will add to the profitableness of the business as a whole.

The problem the accountant has before him is the planning of such records as will show the way in which the various complementary enterprises fit together to fill out the year's employment, and such records as will enable him to show the relative profitableness of each of the competing enterprises.

To secure these results a labor record is a necessity. A labor record showing the exact distribution of all man and horse labor employed each day in the year gives the material for a chart which will show the time employed in each enterprise. The charts for the various enterprises on one farm will show the complementary character of certain crops, and the charts for a series of farms in the same locality on some of which the one, on some the other, of a group of competing crops are being grown, the competitive character of certain crops can be shown.

It is necessary to know what was done and what might have been done in order to judge the merits of the management. A labor record may show the hired man was cutting wood on a given forenoon in June. If supplementary data show the land was too wet to be cultivated and that the clover was not ready to be cut, etc., it may prove to be true that cutting wood was the most profitable work the laborer could be doing. If, however, in July the records show a half day spent in repairing a binder preliminary to commencing grain harvest, which time might have been employed in cultivating corn, or in harvesting hay or grain, the student of the problem of farm management will have a right to question the wisdom of cutting wood that day in June which might have been used in repairing the binder and thus resulting in the saving of valuable time in July. . . .

In studying the demands of the various crops upon the time of the farmer, operations should be divided into two classes: (1) Those which must be done within very narrow limits of time, such as seedisg and harvesting of small grain, the planting and cultivation of corn or tobacco, and (2) those which can be done equally well at any time through a period of considerable length, such as plowing and threshing. Labor of the former class should always take precedence over that of the latter class, but labor of the second class should not be put off until it must be done when labor of the first class is demanding attention. If plowing is left too long, it may delay the planting; if threshing is postponed too long, it may conflict with tobacco harvest or silage cutting. . . .

The next step in the study, is to compare the relative profitableness of the competing crops. The accompanying table illustrates methods of comparing relative profitableness.

In calculating profits on the specific crops the general farm expenses were not considered. It is relative profitableness, not the absolute net profit which is compared.

No generalization can be drawn from this table as to which crops will, as a rule, be most profitable to the farmer. It happened that the small grain crops were good and the corn crop generally poor the year these records were kept. . . . But this table is of significance in that it contains evidence that the farmer or the experiment station worker is in danger of going wrong if he applies generally the . . . method of comparing profits per acre. On the basis of profit per acre, the tobacco was almost three times as profitable as the corn,

but on the basis of profit per hour, the corn was about four times as profitable as the tobacco. Where approximately the same labor is expended per acre the same result is reached whether one uses the acre or the labor basis. . . . Profit per acre multiplied by the number of acres the farmer can handle of the two crops may be a means of combining the acre and the labor basis of calculating relative profits. . . .

Taking profits per unit of labor as a starting point for further consideration, note some of the limitations and complexities involved in its use. Where two crops can be found which require the attention of the farmer at exactly the same time throughout all their operations and in forms of labor which re-

Methods of Comparing Profits*

Crop	Profit per acre	Profit per hour of labor
Barley	$12.75	$ .734
Oats	13.97	.785
Wheat	19.72	.969
Hay	14.16	1.868
Corn	6.82	.371
Tobacco	18.59	.093

* Based upon records secured in co-operation with United States Department of Agriculture.

quire the same amount of managerial activity per unit of labor the question of relative profitableness is easily worked out on the basis of profit per unit of labor, but where crops are competitive for a portion of the year and complementary for the remainder of the year, the solution of the problem of relative profitableness is not so simple.

Corn and tobacco give a good example. These crops are competitive at the stages when it is vital that the work be done without delay. This means that the one crop cannot be increased without decreasing the other. Yet a very large proportion of the labor on these crops can be performed . . . without any conflict of one with the other. Before any conclusion can be drawn as to which of these crops yields the larger return per unit of labor, it is necessary to ascertain to what alternative use the labor could have been put and the rate of return the labor would have yielded during the time devoted to harvesting and stripping the tobacco and the time of harvesting and shredding the corn. Using this rate as the "opportunity cost" of the labor at these periods and charging it against the crop using the labor at these times of non-competitive use, the remainder of the net return to labor can all be accredited to the labor during the period of competitive use. The crop which, by this method, shows in the long run the highest return to labor during the competitive period will prove the more profitable.

While the above illustrations relating to what to produce deal with crop selection, the problem of whether to sell or feed the feedable products of the farm, and the problem of the kind of livestock to keep are equally important. The attention of a skillful accountant is required to plan a system of records which will give basis for passing judgment on these questions.

Another set of problems which the agricultural economist may well consider, relates to the proportions in which the factors of production should be combined. The most familiar phase of this question is commonly spoken of as "intensity of culture." . . .

In order to carry on investigations in intensity of culture, the experimental method must be made use of. . . .

The proper degree of intensity of culture must be determined for each farm, and the result will change with variation in the wages of labor, the cost of equipment, and the price of land. The first step toward progress in this line is the discovery of a method of experimentation which can be applied upon any farm without state aid and without endangering the profits of the farmer. . . .

Taylor taught that in setting up a system of crop rotation, with a view to the most profitable utilization of land, labor, and equipment, two sets of basic facts were needed: (1) facts of costs and prices, and (2) the time of year each enterprise makes demands for labor and equipment. He purposely produced silage corn, corn for grain, sugar beets, and tobacco on his own farm in the same year in order to see more clearly the ways in which those crops were competitive. Taylor emphasized the fact that labor records are essential in distributing costs to the various enterprises as well as in showing the way in which various enterprises fit together in providing continuous employment. The problem is how to keep labor employed on the most profitable enterprise available for each season, in fact for each day, in the year. When this is accomplished the profits should add up to the maximum, consistent with the quality of performance.

After making several studies by means of daily labor records to determine more exactly the way in which farm enterprises fit together in making up the annual program of work on the farm, Taylor undertook to simplify the method for practical educational purposes. He met a group of farmers and asked them to tell him what their usual farm work schedules were each week in the year. Using a blackboard for visual presentation, Taylor had the group provide material from which he constructed a chart showing how the enterprises dovetailed or competed in their demand for labor. The farmers knew at once which crops were competitive and which were noncompeting.

In 1918 the Wisconsin Agricultural Experiment Station published a bulletin on "Price-Fixing and the Cost of Farm Products."[48] In that bulletin Taylor, the author, pointed out that the wide range in costs from farm to farm, the presence of joint costs where several enterprises are combined in making up the annual labor program of the farm, and disagreements regarding the elements of cost made it difficult to utilize specific costs in fixing prices of individual products. To quote from that bulletin:

. . . It is believed that the true solution of this problem lies in the substitution of total farm profits for specific costs as a basis of price regulation. . . .

[48] H. C. Taylor, "Price-Fixing and the Cost of Farm Products," Wisconsin Agr. Exp. Sta. *Bulletin* 292 (Madison, 1918).

When the point of view of total farm profits is accepted by the price commissioner the problem becomes that of so regulating prices that the farmer in one line of production may reap as large a reward as he could earn producing some other product, or else of helping him in getting into some other line of production. By looking to total farm profits he avoids many of the difficulties arising out of differences in the costs of producing a given article by different men. . . . Likewise the question of joint costs is avoided, for it is no longer a question of the cost of a specific product, but of comparing the total farm profits resulting from the various types of farming and from the different competing elements in each kind of farming. . . .[49]

In 1923 the U. S. Department of Agriculture published the results of a study of the cost of producing milk on Wisconsin farms.[50] That bulletin was based upon a joint study made by the Wisconsin Agricultural Experiment Station and the Bureau of Agricultural Economics of the U. S. Department of Agriculture. The results of that study were not published at Wisconsin but were written by a member of the Wisconsin staff. That bulletin was issued at a time when there was an insistent demand for cost figures by those who believed prices should be controlled and that controlled prices should have a definite relation to costs of production. Agencies subject to the pressure of public opinion, and particularly those subject to the pressure of propaganda groups and the political reactions to presure groups, found themselves under the necessity of producing cost of production figures, especially the costs of staple farm products.

The agricultural economists in Washington and in Wisconsin who were responsible for the bulletin were quite conscious that the costs of producing a given product varied greatly from farm to farm, from area to area, and from year to year. They knew that by averaging the unit costs a figure would result that would be below the cost on more than half of the farms. They knew that joint costs were as numerous as the combination of enterprises in farming. They knew that farmers will not quit producing a given product just because the price of that product is below the cost of production for one year or even for a longer period. They knew that it is the combined results of their farming enterprises that keep farmers going, not the cost-price relation of any given product. They knew that farmers operate on the basis of a whole complex of motives of which money profits is only one and often not the dominant one.[51] Yet when a fervent demand arose for cost figures for specific products, they responded. There was an effort to conduct cost studies in a manner to provide data of value in farm management studies while meeting the demand for cost of production figures on the part of those who hoped to adjust prices

[49] Taylor, "Price-Fixing and Cost," pp. 6, 8–9.

[50] S. W. Mendum, "Cost of Milk Production on Forty-Eight Wisconsin Farms," U.S.D.A., *Department Bulletin* 1144 (Washington, 1923).

[51] See L. H. Bailey, *The Harvest* (New York: The Macmillan Company, 1927), Chap. 25. Bailey also wrote: "men will be recompensed for tilling the soil in the very joy of tilling it, seeing that men must always have occupation; and in these natural kinds of occupation we shall ever find new satisfactions as knowledge accumulates and as appreciation grows, for the discovery of the nature of the soil is not yet complete." See also *ibid.*, p. 129.

on the basis of costs. The major damage of the agitation for price control on the basis of specific costs was that it turned the attention of farmers away from making adjustments in their management which might have been beneficial. It was under these conditions that the bulletin on the "Cost of Milk Production on Forty-Eight Wisconsin Farms" was issued. It carries the earmarks of the dual purpose. This is indicated in the opening paragraphs:

> The purpose of this study was to observe the management of a number of herds kept under ordinary farm conditions and to measure the more important factors of cost, with a view to determining the nature and degree of changes in management which may be expected to result in a more favorable relation between income and expense as prices of materials and of products change. Information was gathered through regular reports submitted by the farmers, supplemented by personal observations. The determination of an average cost figure was urgently solicited by farmers, with a view to influencing prices paid by consumers and factories, but for reasons apparent to all who are familiar with cost data, this figure is of only minor significance.
>
> Milk production is only a part of the farm business on most Wisconsin dairy farms. Besides milk production, there are the herd itself, other classes of productive livestock, the corn, small grains, and hay grown to feed the livestock, and a variety of special crops grown for sale. Each of these other enterprises contributes more or less to the farm income, and entails its share of the farm expense. These shares are variable and not always well defined. Moreover, there are wide differences in the amount and value of land, buildings, equipment, and labor devoted to the several farm enterprises.
>
> It would be desirable if these various enterprises could be made to stand on their own merits, and to some extent they do, but the decision with respect to the management of any one of them does not depend solely on the fact of a figured profit or loss in any season or period of years, but rather on how it fits in the general farm operations. An enterprise will be continued as long as it pays better than any other which could be substituted for it, and as long as it contributes to the net income of the farm, either directly or indirectly. . . .
>
> The chief element in the cost of producing milk is feed, with labor next, the two together constituting two-thirds or more of the total cost. The remainder consists of a number of smaller incidental charges. In order to simplify the discussion as much as possible these are taken up separately. With the same purpose in view, milk production is considered primarily as an independent enterprise, then in its relations to the whole farm business. That the figures may be most generally usable, they are given as quantities to which anyone may apply prices or cost rates for any given time or locality. On the average, these basic factors of cost do not change so much or so frequently as do prices, although they show a wide range, suggesting the possibility of important changes in financial results to be brought about by changes in management.[52]

The last sentence in the above quotation provides the point of departure for an important study in farm management which was not pursued in that bulletin. Public interest was in cost per 100 pounds of milk. That figure and its relation to the price received is the result that stands out in the summary of findings. In all of the five areas

[52] S. W. Mendum, "Cost of Milk Production on Forty-Eight Wisconsin Farms," U.S.D.A., *Department Bulletin* 1144 (Washington, 1923), pp. 1–2.

studied, the cost figures published were appreciably above prices. For all 48 farms, the cost per 100 pounds of milk as given was 25 per cent above the price.[53] The bulletin carries the following statement of opinion regarding the relation of specific costs to prices, which indicates the state of mind of the author and others responsible for the bulletin:

> . . . Competition is the ruling factor, with farmers bidding against each other and consumers paying as little as they are obliged to pay. It is not so much a question of what milk costs as of what farmers are willing to take for their milk. Just as a long period of rising prices was necessary to attract enough milk to glut the market in the fall of 1920, so a period of low prices will be necessary to discourage the less-favorably situated dairymen to the point of giving up milk production, and they seem likely to persist, partly because milk production seems to pay better than other alternatives and partly because they are willing to take less for their milk and therefore less for their services than others. This is what makes it so hard for dairymen to agree on a price and to hold together when a price is set. No price can be established on "cost of production," for, once a price is made, costs are immediately altered either by increasing production of decreasing or increasing costs of materials, or, more than likely, a combination of these alternatives. During the process of adjustment some dairymen are bound to suffer loss.
>
> Some farmers concerned in this study were able to produce milk at a cost less than the price received by virtue of unusually high production or of unusually low expenses, or of a combination of the two, resulting in low unit costs. Most of them also had other enterprises which contributed to the annual income. Farm income exceeded farm outlay, but out of that margin had to come the living of the family and the maintenance of the farm buildings, equipment, live stock, and supplies. Many dairymen had to draw on these supplementary sources of income in 1920 to make up for deficits in the main line.[54]

Another co-operative study of costs with special reference to efficient management of dairy herds was issued by the Wisconsin Agricultural Experiment Station in 1927.[55] Those who prepared that bulletin were not burdened with the necessity of finding average specific costs. Their attention was devoted to finding the low cost combinations. They also inquired whether the wide range in the cost of milk from farm to farm was due to differences in the skill and judgment of men or differences in practices that anyone could follow. The issue was stated as:

> Records of milk production under farm conditions show that some dairymen produce much more milk per unit of cost than do others. What are the reasons for these variations in costs from farm to farm? Is it due solely to the greater native ability of some men to handle cows, or are there actual dif-

[53] Mendum, "Cost of Milk Production," p. 21.
[54] Mendum, "Cost of Milk Production," pp. 21–22.
[55] M. J. B. Ezekiel, P. E. McNall, and F. B. Morrison, "Practices Responsible for Variations in Physical Requirements and Economic Costs of Milk Production on Wisconsin Dairy Farms," Wisconsin Agr. Exp. Sta. *Research Bulletin* 79 (Madison, 1927). Wisconsin Agr. Exp. Sta., Wisconsin State Department of Markets, and the Bureau of Agricultural Economics of the U.S.D.A. co-operating.

ferences in practices which the less efficient men can copy and so improve their own results? This bulletin provides a scientific basis for answering these questions.

The problem involves two ranges of questions: (1) How efficiently is milk production organized on each farm, with regard to the technological details which govern the physical relation of quantity of labor and materials consumed to volume of milk produced? (2) How effective is the combination of cost factors in the light of the prevailing economic conditions at the time — of the prices of the cost factors, and the value of the product?

The answer to the first question is independent of economic conditions. Certain standards of care, feeding, and dairy management apply regardless of current economic conditions. Developing cows which are efficient milk producers; feeding milking cows a ration which is well above purely maintenance requirements; furnishing an adequate water supply; and maintaining comfortable and sanitary housing conditions, are all sound practices at any time, practically regardless of price conditions.

But the answer to the second question will change somewhat with changing prices. When grain feeds are cheap it pays to feed much more grain than when they are high; when the crop of hay is unusually large and hay prices are low it may pay to depend much more upon hay than when the crop is short. And there may be differences even in the kind of cows themselves.[56]

The significant subject of whether variations in costs are related to differences in native ability of farmers was not referred to again in the bulletin after the opening paragraph.

In 1928 Wisconsin issued another bulletin based upon a co-operative project.[57] The bulletin gives the elements of costs in great detail. Tables of "standard requirements" are given in terms of man labor, horse work and other factors. The facts are given for individual farms and also in averages which provide a basis for comparing individual differences which are obscured in the average. The bulletin contains many tables of detailed costs for individual farms. The costs show a wide range from farm to farm. Since the costs are itemized, a given farmer can see which of his own elements of cost are relatively high. Thus it would seem that the data provide the basis for sound thinking relative to the economics of farm management.

Cost Accounting at Cornell

In his book published in 1913, George F. Warren included the seasonal distribution of labor as a part of the discussion of diversified and specialized farming.[58] He also reproduced a complete set of cost accounts as kept by a farmer, and added his own comments on the interpretation and meaning of cost accounts, the details of methods of accounting, and the principles involved.[59] Warren's grasp of the

[56] Ezekiel, *et al.*, "Practices Responsible for . . .," p. 1.
[57] P. E. McNall and L. S. Ellis, "Farm Costs and Practices in the Production of Walworth County Crops and Livestock," Wisconsin Agr. Exp. Sta., *Research Bulletin* 83 (Madison, 1928). Wisconsin Agr. Exp. Sta., Wisconsin State Department of Markets, and the Bureau of Agricultural Economics of the United States Department of Agriculture co-operating.
[58] G. F. Warren, *Farm Management* (New York: The Macmillan Company, 1913), pp. 109–27.
[59] Warren, *Farm Management*, pp. 440–93.

importance of the right combination of enterprises in a diversified system of farming is indicated by his statement:

> No matter how profitable a product is, there is a limit to the amount that can be raised with a given amount of labor. Usually only a small fraction of the year can be devoted to the product. The farmer's problem is a very complicated one. It is not so easy as picking the most profitable enterprises. He must determine the combination that will give the greatest returns for the year's work. No one should expect to make a very large profit from farming, unless his business provides a full year's work.[60]

From labor records which had been kept on specific farms Warren showed the distribution of labor on alfalfa, corn, timothy hay, oats, wheat, potatoes, apples, cabbage, dairy cows, and poultry. The charts would have been more valuable had the distribution of labor been shown by the day or week instead of by the month. The kind of variations here covered up have been shown by other studies. Daily distribution shows specifically the days when field work is in progress in a given year and the way in which the work on the different enterprises is fitted together.

C. E. Ladd's study, entitled "Cost Accounts on Some New York Farms," covered the years 1912 and 1913, and was based on a project carried on in co-operation with the Federal Office of Farm Management.[61] Ladd described the methods used in cost accounting work in New York State.

> . . . On each farm an inventory was made at the beginning and at the end of the year, care being taken to get the actual farm value of each article inventoried. In the case of animals, the value was placed at what the owner could get for them at a normal sale. Hay, grain, stalks, and other supplies were inventoried at the market price, less the cost of marketing.
>
> Each farmer had two account books, one marked *Work Report* and the other marked *Ledger*. In the work report a record was kept of all the man hours and the horse hours worked on the farm, classified on separate pages under the name of the enterprise for which the work was done. In the ledger an account was kept of all the money paid out or received. These amounts were entered under separate accounts in the ledger as the transactions occurred. Transfers of feed or other items from one enterprise to another were made in the ledger.
>
> At the end of the year the total number of man hours worked on the farm was found from the work report. The total cost of labor was found from the ledger. To find the labor cost per hour, the total cost was divided by the total hours worked. All labor was then charged at this rate to the various enterprises, according to the number of hours worked on each. The cost of horse labor was found and distributed in the same way. The cost of equipment use for the year was distributed among the various enterprises on the basis of the number of horse hours worked on each enterprise.
>
> Where manure was used, ordinarily 40 per cent of the value of the manure and 40 per cent of the cost of applying it was charged to the crop receiving the application; 30 per cent of each value was charged to the next crop on the same field; 20 per cent to the third crop; and 10 per cent to the fourth.

[60] Warren, *Farm Management*, p. 109.

[61] C. E. Ladd, "Cost Accounts on Some New York Farms," Cornell Agr. Exp. Sta. *Bulletin* 377 (Ithaca, 1916).

These percentages were varied somewhat according to the physical characteristics of the soil. . . .

The College furnished all account books, and the college representative visited the farms to inspect the accounts, aided in taking inventories, and closed the accounts at the end of the year. Factors were worked on all the accounts at the end of the year, and these, together with a letter of explanation and criticism of results, were sent to the farmer. In return for these services, the College received a copy of each cooperator's books, with the understanding, however, that in using individual results the cooperator's name should not be given. . . .

. . . In 1912 accounts were closed on eighteen farms. Fourteen of these were real farms, run in a practical manner, and the results are sufficiently accurate to be used for further study. During that year much experimenting was done with various methods of accounting. In 1913 accounts were obtained from thirty-three farms.[62]

In that report the cost of man labor and of horse labor per hour was shown and the costs were distributed to the various enterprises on the basis of the number of hours spent on each enterprise, shown thus:

Average Distribution of Cost of Producing Silage Corn[63]

	1912		1913	
	Average cost per acre	Per cent of total cost	Average cost per acre	Per cent of total cost
Seed	$ 0.70	2	$ 0.89	3
Fertilizer and manure	5.88	19	6.41	20
Man labor	5.85	19	6.86	21
Horse labor	8.85	28	8.67	27
Equipment labor	2.66	9	3.04	9
Use of land	3.18	10	3.39	10
Use of buildings	1.68	5	1.52	5
Filling machinery	2.08	7	1.43	4
Miscellaneous	0.39	1	0.38	1
Total cost	$31.27		$32.59	

The results were stated in terms of yields per acre, value per acre, value per unit of product, profit per acre, profit per unit of product, and profit per man hour devoted to the enterprise. (See Table on p. 414.)

That procedure was applied to hay, corn, oats, and potatoes as principal crops in the state. Of the livestock enterprises, the dairy accounts were summarized and the profits calculated per cattle unit for grade herds and for purebred herds. The types of work to be done on the farm were divided into two classes:

All labor was first classified under labor fixed as to season, and labor not fixed as to season. Plowing, hauling fertilizer, threshing, and cleaning seed, were considered as labor not fixed as to season. Fitting the ground,

[62] Ladd, "Cost Accounts," pp. 773–74.
[63] Ladd, "Cost Accounts," p. 785.

AVERAGES FOR SILAGE CORN[64]

	1912	1913
Number of farms	7	21
Total number of acres	101.0	262.8
Total yield in tons	809.0	1,659.5
Yield per acre in tons	8.01	6.31
Value per acre	$33.00	$26.04
Cost per acre	31.27	32.59
Profit or loss per acre	1.73	— 6.55
Value per ton	$ 4.12	$ 4.12
Cost per ton	3.90	5.16
Profit or loss per ton	0.22	— 1.04
Profit or loss per man hour	$ 0.05	—$ 0.16
Man hours per acre	37.4	41.8
Horse hours per acre	52.9	59.4
Pounds of commercial fertilizer per acre		*325

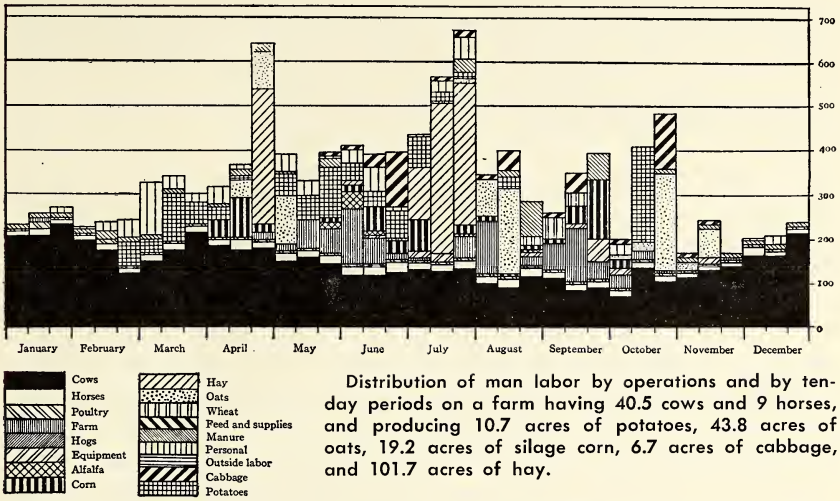
* Average for the 14 farms that used commercial fertilizer on corn.

planting, harvesting, cultivating, spraying, and rolling, were considered as labor fixed as to season. Marketing was not included in any of the tables. Work on cows was all considered as fixed labor. This was separated into labor on chores or other work, and milk hauling.[65]

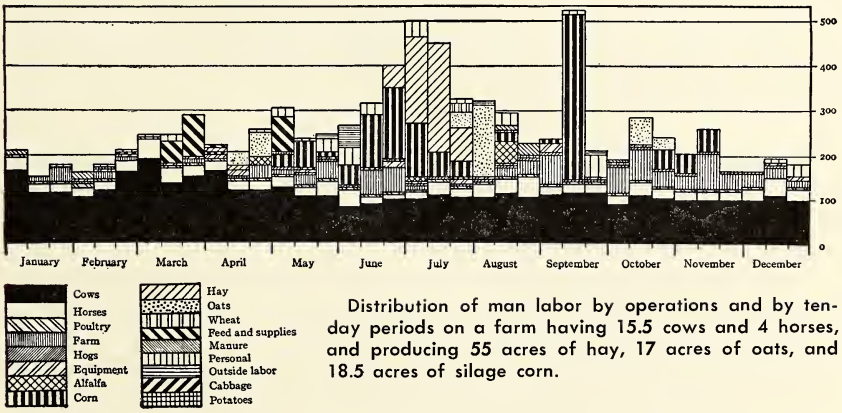
These classes of labor were tabulated by 10-day periods throughout the year for each of the principal enterprises. Charts were constructed on this basis for three farms, two of which are reproduced on page 415.

The data given provide the basis for discussing the way in which the enterprises fit together into a system of crop rotation and feed utilization from the standpoints of relative profitableness of the competing crops, the supplementary character of the noncompeting crops, and the way in which the enterprises might be adjusted to give a more even demand for man and horse labor, and thus avoid the peak loads which are so evident in the charts. But attention was not called to this subject in the text. Perhaps it was considered that many more data would be required, and through a longer period of time, before conclusions could be drawn safely. However, it is to be regretted that attention was not called to the use the farmer might make of such data in planning a combination of enterprises. By studying the tables, the competitive character of silage corn and potatoes is obvious. They are competitive for the farmer's time and equipment except at harvest time.

[64] Ladd, "Cost Accounts," p. 784.
[65] Ladd, "Cost Accounts," p. 793.



Distribution of man labor by operations and by ten-day periods on a farm having 40.5 cows and 9 horses, and producing 10.7 acres of potatoes, 43.8 acres of oats, 19.2 acres of silage corn, 6.7 acres of cabbage, and 101.7 acres of hay.



Distribution of man labor by operations and by ten-day periods on a farm having 15.5 cows and 4 horses, and producing 55 acres of hay, 17 acres of oats, and 18.5 acres of silage corn.

Cost Accounting at Minnesota (Continued)

Having noted the work in four other states, attention is again turned to Minnesota.

Minnesota research workers had been gathering the facts of labor distribution by enterprises since 1902, but they published nothing on that subject until 1916. In that year Cooper, Peck, and Boss issued two bulletins which present tables showing the hours of man labor and of horse labor performed each month in the year.[66] Other tables

[66] T. P. Cooper, F. W. Peck, and Andrew Boss, "Labor Requirements of Crop Production," Minnesota Agr. Exp. Sta. *Bulletin* 157 (University Farm, St. Paul, 1916); Andrew Boss, F. W. Peck, and T. P. Cooper, "Labor Requirements of Livestock," Minnesota Agr. Exp. Sta. *Bulletin* 161 (University Farm, St. Paul, 1916).

show the total amount of labor used per operation on each enterprise and also the amount of labor per month on each enterprise. To make this concrete, a few typical tables will be reproduced. The first shows the percentage distribution of man and horse labor among four classes of work as follows:

DISTRIBUTION OF LABOR[67]

Kind of labor	Northfield		Marshall		Halstad		1,920-acre farm*	
	Man	Horse	Man	Horse	Man	Horse	Man	Horse
	Per Ct.	*Per Ct.*	*Per Ct.*	*Per Ct.*	*Per Ct.*	*Per Ct.*	*Per Ct.*	*Per Ct.*
Crop	36.4	75.8	44.3	79.9	39.7	83.7	48.4	84.2
Productive livestock	37.2	6.8	25.3	5.5	27.8	4.0	10.0	0.5
Work horses	9.0	5.7	11.8	2.0	15.2	2.1	20.1	2.4
Miscellaneous	17.4	11.7	18.6	12.6	17.3	10.2	21.5	12.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* The 1,920-acre farm in northwestern Minnesota is operated solely for grain-production. The figures show the distribution of labor where from 1,300 to 1,500 acres of small grains are grown annually.

In the above table, the "miscellaneous" labor category comprises service work, such as the maintenance of the farm buildings and surroundings, drainage, personal service and other efforts required to keep the farm in workable condition.

Another table[68] gives the over-all picture of labor distribution by months among crop, livestock, and miscellaneous projects for a group of farms through a period of eight years in a region of diversified farming where milk production is an important source of income. The increase in the requirements for man labor during August, September, and October over April and May is 19 per cent in the Northfield group, whereas on the single cropping farms of Halstad the increase of labor requirement for the same months was 58 per cent. "This illustrates the need of providing productive enterprises on which a fair part of the balance of available labor may be employed."[69]

The labor requirements for producing corn, oats, barley, rye, flax, potatoes, mangels, hay, timothy seed, clover seed, millet, and hemp were shown.

The facts were presented as basic data which may be used in various ways. For example, the three items, cutting, shocking, and shock threshing, may be compared with the labor requirements in accomplishing the same result with a combine. It will be noted that

[67] Cooper, *et al.*, "Labor Requirements of Crop Production," p. 11.
[68] Cooper, *et al.*, "Labor Requirements of Crop Production," p. 13.
[69] Cooper, *et al.*, "Labor Requirements of Crop Production," p. 17.

the data are given on an acre basis. The reason given for this is stated in the bulletin:

> . . . Yields vary so much, owing to conditions not affected by the labor used, that the acre, which is a standard unit, is the best basis on which to compute the labor requirements.
>
> Labor required in growing a crop remains practically the same within the limits of fluctuation of normal yields. For example, there is very little difference between the labor required to produce a ten-bushel crop of wheat and that required for a twenty-bushel crop. The labor required in plowing, seeding, harrowing, cutting, and other cultural operations, is practically the same. The only additional labor required is for shocking and hauling to market, or stacking.[70]

We need to assume, of course, that the authors had in mind the conditions on a given farm, with a given farmer and a given type of equipment.

The next step in the presentation of labor requirements was the tabulation of the distribution of man and horse labor by crops and by months. A glance at the tables shows roughly the way in which the farmers, in a measure, balanced the crop load by combining small grain, corn, and hay crops. However, something is concealed in the tables because they present the average of a group of farmers. Each farmer may not have produced every one of the crops. Thus the conflicts indicated in the table did not necessarily occur on the individual farms.

The facts of chronological labor distribution by enterprises, showing how the crops can be fitted together in the labor program, along with the facts which show the relative returns to labor of the various crops which require labor at a given season, give the basis for answering, for the given time, place, and market, the question of crop selection for rotation. But the textual discussion did not point out these significant relationships. The presentation of basic facts seems to have been the self-assigned objective of the authors.

The objectives as stated in the bulletin should be held in mind in considering the data presented. The Minnesota experiment in cost accounting was not undertaken with a preliminary, theoretical analysis of the problems of farm organization and operation, but rather with a belief that the gathering and tabulating of data would lead to the finding of the principles to be followed in the management of a farm. With this in mind, we quote from the bulletin:

> The original purpose in attempting the cost-of-production studies that furnish the data for this bulletin was to determine the money-cost of producing farm products under actual farm conditions. Later the need of converting the data obtained in these studies into terms of labor requirements became evident as a more stable basis for interpreting the facts. The thirteen years of detailed study of these farms has afforded valuable information on systems

[70] Cooper, *et al.*, "Labor Requirements of Crop Production," p. 21.

of farm management, types of farming, cost of operation, and labor requirements.[71]

. . . Labor is something that the average individual always has available and consequently it is often expended without assurance of fair return, and is often wasted on one enterprise when it might be profitably employed on another.

So far as the individual farmer is concerned, labor is quite likely the limiting factor in the size and profitableness of his business. Land and capital can be hired or rented, usually in reasonable amounts and at reasonable rates, and hired land and hired capital are just as efficient as owned land or capital, while hired labor is seldom as efficient as one's own labor, and competent hired labor is often difficult to secure at reasonable prices.

Labor and its relation to the various crops and enterprises on the farm must be studied as thoroughly as land and capital if the more efficient systems of farm management are to be established.

With the area of land comparatively fixed and the rates for the use of capital definitely known, the use of labor becomes an important factor in farm success. Profit and efficiency are secured mainly by the efficient use of labor. . . .

It is often said that less labor should be the aim of the farm operator, and systems of farming have been developed to reduce the amount of labor required. We believe that more study should be given to farming systems that will employ not less labor but more labor on productive enterprises. Studies of successful farms indicate that farm profits are derived largely from well-directed and well-distributed labor on productive enterprises, thereby allowing the payment of good wages throughout the year.[72]

The same authors continued their presentation of the subject in a bulletin relating to the labor requirements of livestock. The authors stated:

The data herein presented show the actual labor expended in caring for different classes of animals on these farms, and indicate the labor requirements in terms of man- and horse-hours per head and per farm group. In order that these requirements may be understood, supplementary information is added which explains the conditions under which the data were gathered, the manner of collecting them, the location of the areas studied, and other factors influencing the results reported.[73]

. . . It is noted at once that a low requirement exists during the summer months. The five inactive crop months, November, December, January, February, and March, demand the most labor on cows. This again illustrates the value of diversity in distributing the demand for labor, and the importance of using labor on cows when not required by crops.

. . . The difference between the two seasons in man-hours per cow per month is 22 per cent less in the summer months at Northfield and Marshall; 14 per cent less at Halstad; and 10 per cent less on the 1,920-acre farm.[74]

. . . For hogs, approximately 30 per cent more man labor is demanded per month during the five months, January, February, March, November, and December, than during the seven active months. . . .[75]

The average annual general-expense hours per head of sheep are very small because of the small maintenance labor required. . . .

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[71] Cooper, *et al.*, "Labor Requirements of Crop Production," pp. 6–7.
[72] Cooper, *et al.*, "Labor Requirements of Crop Production," pp. 5–6.
[73] A. Boss, F. W. Peck, and T. P. Cooper, "Labor Requirements of Livestock," Minnesota Agr. Exp. Sta. *Bulletin* 161, p. 7.
[74] Boss, *et al.*, "Labor Requirements of Livestock," p. 28.
[75] Boss, *et al.*, "Labor Requirements of Livestock," p. 34.

The largest demand falls in February, March, and April, the lambing-season, as is naturally expected. During the summer and fall, up to December, they have the run of pasture and crop fields, hence little labor is demanded in those seasons.[76]

The next step in the evolution of the Minnesota cost accounting project related to the cost of milk production. The authors introduced the subject in this manner:

Prices for milk have been fixed in many cities but not satisfactorily fixed. The questions keep coming back: What is a fair price for milk? What does it cost to produce milk? Should milk be sold for its cost or at its value as a food? and others. Few who ask the questions realize how dependent the human race is on the milk supply. A less number have any idea how complicated the problem of determining a fair price for milk really is. Obviously the cost of any product depends on the commodities entering into it, the value of these commodities, and the efficiency of manufacture. But the price that shoud be paid for a product or commodity depends on how much the product is needed or desired. Sometimes the price is above cost, sometimes far below. When it is too far below cost a readjustment of values must be made and that is what is now occurring in the dairy business. In making the readjustment a study of cost is essential to a thoro understanding of the problem, even tho it may not be the base from which the price ultimately is determined. A study of costs enables the operator to control the different factors of cost in order to secure efficiency of production. An accurate statement of costs will enable the dairyman to study his business and develop methods by which milk or butterfat can be produced most cheaply. It will also serve as one of the factors which determine whether or not he can afford to stay in the business, but it does not necessarily determine the price for which milk should be sold. Values also must be considered. Values rather than cost may well be the determining factor in fixing the price.

Another function of a standardized and accurate system of learning the cost of producing milk would be to satisfy the consumer that it is *cost plus a reasonable profit,* and not *exorbitant profits,* that he is paying in the increased price of milk. Such a system would permit also of a comparison of costs between different sections of the country and would eventually be useful in bringing producers and consumers together in an understanding of what is a fair price for milk.[77]

In that bulletin primary attention was given to an analysis of the labor and material "requirements"[78] in production and the method of calculating costs of production at any given time and place by applying current wages and prices to these functional and material elements. These elements include cow costs (made up of interest, taxes, insurance, and depreciation), the sire costs, feed requirements per cow and per hundred pounds of milk, labor requirements, shelter requirements, and general expense including veterinary fees, cow testing association fees, etc. All of these items were obtained from farmers on cost accounting routes.

[76] Boss, *et al.,* "Labor Requirements of Livestock," p. 36.

[77] F. W. Peck and A. Boss, "The Cost of Milk Production," Minnesota Agr. Exp. Sta. *Bulletin* 173 (University Farm, St. Paul, 1918), pp. 6–7.

[78] In common usage the word "requirements" indicated the amount used on the farms where the accounts were kept, but may be misleading as it seems to imply a fixity that seldom, if ever, exists in a dynamic world.

Part I is a discussion of the various factors that enter into the cost of producing milk. The data presented partake of the nature of engineering data in that the bases for computing the various costs rather than any set figures of cost are discussed. This discussion is essential to the clear interpretation of the data as presented in Part II and to an understanding of the cost of producing milk. The records from three statistical routes of Minnesota farms furnish the basis for the publication.[79]

Quantities, rather than values, were emphasized in gathering the basic data. Knowing the pounds of the various kinds of feed and the hours of labor required, these major elements of cost could be calculated at a given time and place in terms of current prices of feed and wages of labor. On this point the authors said:

> To approximate the cost of milk at any certain time or for any certain period, current prices must be used on known quantities. The changing factor in cost is price. The amounts of feed consumed by cows of similar production do not vary greatly. The hours of labor are fairly constant and the miscellaneous items can safely be estimated by knowing the proportions of the various costs.[80]

The shift in the Minnesota cost accounting from money costs to unit requirements was the beginning of a new era in farm cost accounting in which cost accounting was to be made to face forward rather than backward. It was felt that this change, when associated with an ever-improving agricultural outlook service, should enable intelligent farmers to put their farm management on a budgeting basis. It gave promise of developing a sense of the meaning of farm cost accounts that would enable the farmer to thread his way safely through the economic problems arising in a world of change. But the perfecting of a system of farm cost accounting suitable for practical use in a dynamic world was not a simple task. Recording the facts of farm activity as history had been simple compared with projecting the conclusions from these facts into the future in the form of judgments as to what the farmer should do in the coming years in order to win maximum profits.

Office of Farm Management Participation

Commencing in 1908 the Office of Farm Management of the U. S. Department of Agriculture, under the direction of W. J. Spillman, gave stimulus to the development of farm cost accounting in several states. Spillman worked directly with individual farmers and in co-operation with state agricultural experiment stations which made the contacts with farmers and posted the accounts.

In 1917 a bulletin on the cost of producing milk was published.[81] This was based on daily records sent directly to Washington and cov-

[79] Peck and Boss, "The Cost of Milk Production," p. 7.
[80] Peck and Boss, "The Cost of Milk Production," p. 27.
[81] M. O. Cooper, C. M. Bennett, L. M. Church, "A Study in the Cost of Producing Milk on Four Dairy Farms, Located in Wisconsin, Michigan, Pennsylvania, and North Carolina," U.S.D.A., *Bulletin* 501 (Washington, 1917).

ering a period from four to six years. The findings of that study were summarized:

> While the results derived from the cost records from the four farms in question may be said to be strictly applicable only to the farms upon which the studies were made, nevertheless they are representative of certain types of dairying, and the fundamental facts developed in studying them will be of considerable practical value to all milk producers and especially valuable to those operating under similar conditions.
>
> From the information on these four farms there appears to be a fairly uniform relationship between various items entering into the cost of milk production according to the type of dairying followed. The feed cost on these farms seems to approximate 50 per cent of the total cost of keeping a cow where the cows depended on pasture with little or no grain during the pasture season; whereas, feed cost approximated 60 per cent on the farms where the pasture is limited and a grain ration is fed throughout the year.
>
> Labor, the second important item in the cost of producing milk, amounted to approximately one-fourth of the total cost of keeping a cow.
>
> All other items, including charges for shelter, use of equipment, use of bull, interest, depreciation, miscellaneous supplies, and a share of overhead expenses, amounted to approximately one-fourth the total cost of keeping a cow. The credits other than milk, including the value of calf, manure, and minor items, did not equal the miscellaneous costs other than feed and labor.
>
> Though it cost more to keep a cow that gives a high yield than one giving a low yield, the unit cost of the milk produced fell as the yield per cow rose. This decrease in the cost of milk per pound was much greater in the step from the poor cow to the cow of fair quality than in the step from the fairly efficient cow to the good cow or to the exceptional cow. Thus, from the standpoint of economic milk production, it appears that the first step in building up a poor dairy herd (that is, replacing scrubs with grades) is not merely the easiest step but also the one which promises the most for a given expenditure of money and labor.
>
> The actual cost of keeping the cows varied from year to year on the different farms as well as on the same farm, yet the ratio between each item and the total cost was apparently quite uniform where a similar method of management was followed.[82]

The cost accounting work in Minnesota which was started in 1902, in co-operation with the Bureau of Statistics of the U. S. Department of Agriculture, was continued in co-operation with the Office of Farm Management. Co-operative work was started as early as 1908 in Ohio and by 1909 in New York and Wisconsin. In those states cost accounting was used as a tool for the study of farm management problems. Likewise, Spillman's interest in cost data was related to efficient farm management rather than to prices. But there were political influences calling for cost figures with the thought that by some means prices should be made to equal the cost of production, plus a reasonable profit. Meeting that demand was not as simple as was supposed by those who made it. Criticism of methods and results was inevitable.

While the farm economists were wrestling with the problems of costs, and while at the same time interest was growing in costs as a

[82] Cooper, *et al.*, "A Study in the Cost of Producing Milk," pp. 33–34.

basis of price lifting, either through tariff regulations or through commission prices, W. J. Spillman resigned as Chief of the Office of Farm Management on August 31, 1918.

When, in November 1918, Secretary Houston cast about for a new Chief of the Office of Farm Management, he found a hesitancy, on the part of those from whom he might choose, to consider the position without first knowing the plan of work the Secretary had in mind. Being a student of economics, and knowing the value of group thinking, Houston responded readily to the suggestion that a committee be appointed to outline a plan for the future work in this field.[83] He left the committee free to report to him its findings, but he did not fail to make known that he considered cost of production studies important. When the committee reported to the Secretary of Agriculture at the end of February 1919, cost studies held an important position in the proposed outline of work to be undertaken by the Office of Farm Management and Farm Economics. The committee report stated:

> Cost of production studies are of value to the individual farmer and at the same time are helpful in ascertaining the economic status of farming as an industry.
>
> From the standpoint of the individual farmer the primary purposes are:
>
> 1. To record the details of the farm business for reference.
> 2. To give an insight into the elements and interrelations of the different farm activities.
> 3. To furnish information that may enable the farmer to reduce costs, or otherwise increase profits.
> 4. To make possible a comparison of the profitableness of the different enterprises and combinations of enterprises.
>
> The records secured by cost of production studies give data for analyzing the farm business, and thus are of fundamental importance in the whole program of agricultural research and education. The results of such studies on a number of farms where a given type of farming is practiced are useful not only to the farmers from whose farms the results were obtained, but are of value in showing other farmers how to improve their methods.
>
> From the standpoint of the public, cost of production studies provide the facts which give a basis for intelligent judgment upon the probable effects of any given legislation or other public activity upon the farmer as a producer and as a citizen. Cost of production studies are therefore one of the means of providing the basic facts needed by legislators and price commissions in comparing the profits of competing lines of production and estimating necessary price.[84]

On April 1, 1919, H. C. Taylor, of Wisconsin, entered upon his duties as Chief of the newly oriented Office of Farm Management,

[83] Members of the committee were: G. F. Warren, Andrew Boss, H. C. Taylor, J. A. Foord, J. I. Falconer, R. L. Adams, and G. I. Christie.

[84] U.S.D.A., *Report* of Committee appointed by the Secretary of Agriculture to consider plan of organization, scope of work, and projects for the Office of Farm Management, and methods of procedure in making cost of production studies. U.S.D.A., *Circular* 132 (Washington, 1919), p. 9.

and Frank W. Peck, of Minnesota, was called to take charge of the cost of production studies. With experience in intensive cost accounting in Minnesota, a clear mind, and a dynamic personality, Peck gave a new impetus to the cost of production work. It is true that the growing political interest in agricultural cost studies pointed toward prices rather than farm efficiency, but the latter was not overlooked. In fact, efficiency remained the major interest of Taylor and Peck, although the political interest was recognized as important particularly from the point of view of appropriations. Fortunately both of these objectives could be attained in large measure by the same effort. It is probable, however, that the farmer's interest in efficiency was somewhat dulled by his growing interest in price-fixing.

In speaking of that period, Boss said:

> The reorganization of the Office of Farm Management in 1919 under the administration of H. C. Taylor was followed by an upsurge in cost accounting studies. F. W. Peck of Minnesota was called to Washington to take charge of the Division of Farm Management and Costs in the Bureau. Under his leadership and with the support of Dr. Taylor, a peak was reached in farm cost accounting during the years 1919–1923. Additional states initiating farm cost accounting studies were North Carolina, Georgia, Ohio, Colorado, Iowa, Kansas, Montana, North Dakota and South Dakota.[85]

The cost accounting work of the Office of Farm Management, under Frank W. Peck's leadership,[86] expanded along three lines — new routes were established, individual cost accounting was nurtured, and large numbers of cost of production survey records were taken. The annual report of the Chief of the Office of Farm Management and Farm Economics for 1920 indicates the extent and character of Peck's work:

> In carrying forward the studies in the cost of producing farm crops, records were obtained during the year as follows:
>
> Cost of producing sugar beets in Utah and Idaho — 175 records
>
> Cost of producing wheat in Kansas, Missouri, Nebraska, Minnesota, North Dakota, and South Dakota — 481 records
>
> Cost of growing cotton, together with a complete farm-business analysis in Alabama, Arkansas, Georgia, Mississippi, South Carolina, and Texas — 846 records
>
> Preliminary reports on the cost of producing cotton and wheat have been issued. A bulletin on the cost of producing cotton in 1918 has been submitted for publication, and there is in preparation a bulletin on the cost of growing wheat. The sugar-beet records have been tabulated, but the results of this study will not be published until additional records, to be obtained during the current year, have been tabulated.
>
> Investigations into the cost of fattening cattle have progressed so far that early publication of results may be expected. Active field work in this study

[85] A. Boss, "Forty Years of Farm Cost Accounting Records," *Journal of Farm Economics*, 27:12 (February 1945).

[86] U.S.D.A., Office of Farm Management, *Report* for fiscal year ended June 30, 1919, *Miscellaneous Printed Publication* (Washington, 1919), pp. 1–2.

was not started until September, 1919, at which time cooperative studies in the cost of fattening cattle were inaugurated with Indiana, Illinois, Iowa, Nebraska, and Missouri. In the fall of 1919 a cost-of-cattle-fattening enterprise survey was made on 321 farms and a complete farm-business analysis study made on 269 of the 321 farms visited.

Detailed cost-accounting routes of cattle feeding farms were formed in each State, consisting of approximately 25 farms each, and all were sucessfully carried to completion of the year's work, which ended about July 1, 1920. This gave a total of 126 farms for the five States. A complete business analysis was obtained on the detailed cost-accounting farms, and in the month of June, 1920, two areas were visited in the States of Iowa and Nebraska, and up to the 1st of July 100 farm-business analysis studies had been completed, together with the same number of cost-enterprise records on the same farms.

Farm-business analysis surveys were completed as follows:

Two general crop and live-stock areas in Iowa — 400 records
A fruit and truck area in Florida (third year of study) — 300 records
A general farming area in New Hampshire (repeated after a 10-year period) — 136 records
A general farming area in Ohio (eighth year of study) — 50 records
A fruit district in Virginia (fourth year of study) — 100 records
A cooperative tractor and farm organization study in two areas in Ohio (second year of study) — 100 records

Cooperative cost-accounting studies have been conducted by the route plan in the States of Kentucky, Ohio, Kansas, Montana, Minnesota, and New Jersey. In the States of Kentucky and New Jersey specialized types of farming have been selected, namely, tobacco farms in Kentucky and tomato and potato farms in New Jersey.

In the former State the tobacco crop on 75 farms in each of two areas has been intensively studied, with a complete farm survey record taken on many of the farms at the end of the year. In New Jersey about 160 enterprise survey records were obtained on tomato and potato farms, and about 40 farms were started on detailed accounting on the entire farm business.

In Ohio, Kansas, Montana, and Minnesota a total of 150 farms are cooperating in reporting complete details of the farm operation. Ohio is maintaining two routes of from 20 to 24 farms each; Kansas, two routes of about the same number; Montana one route of 20 farms; and Minnesota, two routes of 24 farms each.[87]

The cost of production surveys[88] relating to cotton, wheat, and sugar beets were made, first of all, to meet the insistent political demand for cost figures. It should be noted here, however, that the facts relating to labor and material used were tabulated by operations so as to also make possible their use in farm management studies.

The results of the investigations of the cost of fattening cattle were summarized in a bulletin published in 1927:

The principal purposes of this study of cattle feeding were: (1) To determine from the operations on a large number of farms the quantities of

[87] U.S.D.A., Office of Farm Management and Farm Economics, *Report* of the Chief for the fiscal year ended June 30, 1920 (Washington, 1920), pp. 570–71.

[88] L. A. Moorhouse and M. R. Cooper, "The Cost of Producing Cotton," U.S.D.A., *Processed Report* (Washington, 1918). Also published as *Department Bulletin* 896, in 1920.

M. R. Cooper and R. S. Washburn, "Cost of Producing Wheat on 481 Farms in the States of North and South Dakota, Minnesota, Kansas, Nebraska, and Missouri, for the Crop Year 1919," U.S.D.A., *Processed Report* (Washington, 1919). Also published as *Department Bulletin* 943, in 1921.

L. A. Moorhouse and S. B. Nuckols, "Cost of Producing Sugar Beets in Utah and Idaho, 1918–1919," U.S.D.A., *Bulletin* 963 (Washington, 1921).

feed, labor, and other cost factors involved in fattening cattle of various ages and weights; (2) to analyze the feed-lot performance of cattle of various ages and weights with respect to rate of gain, length of time fed, and the ability to utilize different kinds of feed; (3) to determine the spread in buying and selling prices or margins necessary to meet the cost of feeding cattle of different weights for different lengths of time with varying prices of feed and of cattle; (4) to find the cost of production and to study the variations in costs with a view to determining the most profitable feeding methods and practices to follow under different price levels in different sections of the Corn Belt; and (5) from the results of feeding operations during the time of this study to present information that will aid the cattle feeder in planning and following the most profitable methods in cattle feeding.[89]

Detailed cost accounting involved so much work that the temptation to use simpler methods was ever present. This accounts for the extensive use of the survey method of studying costs. Survey cost studies fell short of providing all of the data essential to the calculation of the relative profitableness of the various possibilities that lie before the farmer as he plans his farming on the basis of current labor and material costs and prospective prices.

This situation led to interest in the simplification of the cost accounting work while retaining the essentials. At the annual meeting of the American Farm Economic Association, December 28, 1922, H. C. Taylor presented a paper,[90] the primary purpose of which was to point out the means of canceling common elements of cost when making studies of the relative profitableness of two enterprises competing with each other for a place in the combination of enterprises. For example, where two competing crops, such as oats and barley, are under consideration, and where the same equipment is used in the same manner for many of the processes, it simplifies the fact gathering greatly to ascertain only those elements of costs which are different and subtract them from the total return, and thus determine how much more the one crop will pay for the common elements of input than the other. This of course will not tell what the product costs, but it will show how much more one than the other will add to the income as the result of the same outlay. This provides the basis for making a choice between the two crops. Illustration of this procedure was provided by means of the following table, indicating the items of cost which were identical and the items which were different in the production of oats and barley:

In the study of crop selection the objective of the [responsible manager] is the securing of basic information, such as the number of men and horses required and the amount of equipment needed for a given acreage which will give the basis for calculating the relative profitableness of different enterprises from time to time as changes in the prices paid for the instruments of production and for the products of production suggest the desirability of such

[89] R. H. Wilcox, R. D. Jennings, G. W. Collier, W. H. Black and E. W. McComas, "Cost and Methods of Fattening Beef Cattle in the Corn Belt, 1919–1923," U.S.D.A., *Technical Bulletin* 23 (Washington, 1927), pp. 3–4. Also published as a series of U.S.D.A., *Processed Reports*, from 1920 to 1924.

[90] H. C. Taylor, "The Objectives in Agricultural Cost Accounting," *Journal of Farm Economics*, 5:65–78 (April 1923).

METHOD OF SELECTION BETWEEN COMPETING CROPS

	Oats	Barley	Amounts not canceled
Land charges—			
Acres	30	30	None
Discing—			
Man hours	30	30	None
Horse hours	90	90	None
Harrowing—			
Man hours	19	19	None
Horse hours	62	62	None
Seeding—			
Man hours	20	20	None
Horse hours	60	60	None
Seed—			
Bushels	80 @ $.47	55 @ $.60	$4.60
Cutting—			
Man hours	22	22	None
Horse hours	68	68	None
Twine—			
Pounds	104 @ $.14	70 @ $.14	$4.76
Shocking—			
Man hours	40	40	None
Thrashing—			
Man hours	176	144	
Horse hours	238–$59.00	196–$48.40	$10.60
Thrashing—			
Cash cost	$49.84	$44.58	$ 5.26
Overhead and miscellaneous costs	$ 7.40	$ 7.40	None
Total additional cost of oats over barley			$25.22
Value of product—			
Grain	1,350 bu., $540.00	750 bu., $450.00	$90.00
Roughage	30 tons, $150.00	30 tons, $150.00	None
Difference in favor of oats			$64.78

action. It is obvious, therefore, that if our cost data are to be of direct use in this connection, they must be assembled as standards typical of different farms and different conditions, rather than simply as averages from numbers of farms operated in different areas.

The crops having been chosen, another purpose of agricultural accounting is to furnish a basis for making choice between two or more methods of carrying out a given line of production. For example, having decided what crops to produce, the farmer's next problem is that of the degree of intensity with which these crops should be cultivated. The corn-grower must decide whether

to undertake the production of 50 acres of corn per man and team, or to limit the area to 40 or to 30 acres, with the expectation that the larger yield per acre to be secured by the more intensive culture will increase the total profits from the crop. Or the problem of the cotton farmer may be that of deciding the most profitable rate of application of fertilizer. The question is not the rate of application which will give the largest yield, but the application which will return the greatest net profit. . . .

. . . The accountant must recognize that the proportions in which labor and capital must be applied to the land to secure the greatest profit necessarily vary with changes in the relative costs of the factors of production and the price of the product. With the full problem in view he should assemble such facts with regard to rent, wages, equipment, and material as will enable the farmer to draw the right conclusions on the subject at any and all times.[91]

. . . The accounting procedure must depend upon the objective — the question to which we are seeking an answer. And if the results are to be of assistance in answering the questions which will confront us in the future, they must be expressed in terms which admit of modification from time to time to conform to changes in cost rates and prices of products.[92]

Before entering into the discussion of the results of the special co-operative studies of farm organization participated in by the U. S. Department of Agriculture and the several states, under the general leadership of Frank W. Peck, it is desirable to present Peck's views on the uses of cost studies. These views are here quoted from a bulletin prepared while he was with the Federal Office of Farm Management:

Absolutely accurate or universally applicable cost of production figures do not exist. This is apparent with farm products because of the many joint costs involved in the production of most of the staple products, and the necessarily more or less arbitrary allocation of some of the cost factors. The extreme variation from farm to farm in the cost of producing the same product, and the variations from field to field and in different animal units on the same farm become at once apparent in the tabulation of farm cost data. However, the value of the results of careful studies of cost is not impaired by this fact; for what the farmer needs in the reorganization of the farm business is figures which show the comparative profitableness of competing enterprises. For such purposes the figures obtained by the methods now used in farm cost of production studies are probably as satisfactory as are the results obtained in commercial accounting for similar purposes. . . .

Determining Relative Profits

The individual farmer in any line of production is primarily interested in his total farm profit. Naturally his desire is to increase the total profit by eliminating the losing enterprises or the relatively low-paying ones, and to increase the returns from the better-paying lines of production. This means that his interest lies largely in comparing the profitableness of his separate enterprises, which usually allow more or less latitude for selection and for varying the intensity of production and the general farm practices. Hence, one of the prime uses of cost studies to the individual is to determine the relative profits realized from the different parts of his business, with a view to pointing the way to changes in management and organization which will increase the total profit.

[91] Taylor, "Objectives," pp. 70–73.
[92] Taylor, "Objectives," p. 78.

Year in and year out, losses and low profits may be more often caused by low yields in crops and low efficiency of production in live stock than by the wrong choice of enterprises, yet right choice of enterprises is the starting point in good farm management.

Not all the enterprises on the farm need be equally profitable to justify keeping them in the system of farming. Profits are influenced by the way enterprises fit together in utilizing labor, equipment, land, and products. A given enterprise must prove more profitable than any other enterprise which will fit into the same place in the program of the farm if it is to be introduced or retained.

The oat crop is notoriously low-paying from a market standpoint on many farms in the corn belt, yet because in many places it pays better than wheat or barley, serves as a nurse crop, supplements corn from the standpoint of the labor program, and serves as a horse feed and a supplement in dairy and other stock rations, it increases the total farm profit. Beef cattle feeding has often been shown by standard accounting to appear unprofitable, yet because it provides a ready market for coarse feeds and by-products, a return for labor that would otherwise be wasted, and additional fertility for the field crops, it may add to the total profits.

Cost of production figures are valuable in making clear the comparative profitableness of the different enterprises and the different methods of production and thus give basis for intelligent decisions on what to produce and how to produce it in order to secure maximum net profits.

Determining Economy of Various Operations

An important function of cost data lies in their application to the ever-present farm problem of determining the relative economy of various methods of performing farm operations. The costs of producing field crops, for example, are usually reduced by increasing efficiency in the use of labor and equipment. One of the advantages of a good rotation of crops lies in the resultant weed control which often eliminates tillage operations that would otherwise be necessary.

The problem of intensity of culture is a question of relative costs per pound or per bushel as affected by the different combinations of the elements of costs in production. The choice of various methods of doing farm work depends almost solely upon relative costs as they bear upon the profits of the entire farm business. The knowledge required to make these decisions must be gained largely through cost studies.[93]

Conference in Chicago, 1923

Future planning for the work in agricultural cost accounting was the subject under consideration at a conference in Chicago in May, 1923. The Bureau of Agricultural Economics called the conference and invited representatives of the various agricultural colleges with which the Bureau was co-operating in the study of farm organization and cost of production.[94] In his opening remarks, the Chief of the Bureau of Agricultural Economics stated that "we have rather gradu-

[93] F. W. Peck, "Methods of Conducting Cost of Production and Farm Organization Studies," U.S.D.A., *Bulletin* 994 (Washington, 1921), pp. 2–4.

[94] The following men participated: A. Boss, Minnesota; P. E. McNall, Wisconsin; W. E. Grimes, Kansas; F. L. Morison, Ohio; L. A. Moorhouse, Colorado; C. L. Holmes, Iowa; W. D. Nicholls, Kentucky; R. E. Willard, North Dakota; C. G. Worsham, South Dakota; O. G. Lloyd, Indiana; E. Rauchenstein, Illinois; H. C. M. Case, Illinois; C. E. Ladd, New York; H. C. Taylor, H. R. Tolley, R. H. Wilcox, O. A. Juve, and J. W. Tapp, U.S.D.A., Bureau of Agricultural Economics.

ally come to the close of one stage in the progress of our work and have started on the second stage."[95]

The first stage was referred to as the study of the anatomy of farm organization and operation, the second stage the study of pathology and the prescribing of remedies:

In making our studies, putting in our routes, I am wondering whether we should not give our thought more largely to locating routes with a view to getting information for making diagnoses of diseased conditions, rather than locating with a view to getting typically successful regions, in order that we may understand the anatomy of good, successful, farm organization.[96]

Emphasis was given to the fact that it is not enough to know the internal organization of the farm, since these internal factors have to be hooked up with the market.

. . . The information that we get from the farm as a result of analysis of the business must, it seems to me, be brought together and associated with other information relating to price trends, market conditions, shifts in agriculture in all parts of the world. We need to put these two kinds of material together as a basis of diagnosis. . . .

There are certain kinds of information that are essential to a diagnosis that must be gotten by the same methods that we have used in the study of farm anatomy. In the study of farm anatomy we have trained ourselves to the point where we know what is normal and what is abnormal; we know what good functioning is under given marketing conditions. Those of you who are in the states and in close contact with farmers are in a strong position for that type of work. Those of us in Washington are in a somewhat stronger position for getting the general outside information that needs to be brought in close touch with this local information as a basis for diagnosis. What is happening in Europe, what is happening in South America that is going to affect the price of things our farmers are producing? That is information that I believe the federal government had better go after pretty strong and put in shape so you can use it. What is happening all over the United States? What swings in production are taking place that are going to affect the situation months ahead, etc.? Now that information is not very important for a given state unless you know what is true in other states. With the combination of state and federal organizations for gathering statistics, I think good information can be gotten that will be useful for guiding farm management.

We need to develop what I might call the dynamic side as against the static side. I mean this. The "static" goes around but does not go forward; it goes around in accordance with old rules. Knowing how to proceed with a given combination [of forces and conditions] in accordance with the old plan and doing it efficiently is one thing and a part of good farm organization. How to readjust this plan gradually to fit changing conditions is another thing. That is the dynamic side of farm management. Some of our workers have not perhaps reached the stage of doing anything more than study the anatomy; others have gotten to the study of diagnosis and prescription, with efficient plans for doing certain things and doing all in an efficient way; and others have arrived at the stage where they can not only handle this question of how to organize a farm in an efficient way and combine all ele-

[95] *Conference of Research Workers in the Field of Farm Organizations and Cost of Production, May 18–19, 1923. Remarks of H. C. Taylor and Committee Reports,* U.S.D.A., Bureau of Agricultural Economics, Mimeo. (Washington, July 1923), p. 1.

[96] *Conference of Research Workers,* p. 1.

ments successfully, but where they can also see the shifts that are going on and how types of farming must be readjusted to fit new conditions. In these days of after-war problems, we need to be giving a good deal of thought to the question of efficiency in static operations in accordance with good plans, and to push forward our method of diagnosis of the farm and of the market to give the basis for a prescription of how types of farming need to be readjusted in a pathological region so as to put them on a normal basis. Certain of this material the United States Department should get. You should ever be suggesting to us how we can improve the data we are getting. Take the "intentions-to-plant" survey which we probably got out too late this spring. How can we make it more useful? It is a piece of work which we will probably continue to do and regarding which we need your advice as to how to make it useful. All of the statistical work can probably best be done by a central organization, but if we are to direct it to the best advantage we want your help.

As I grasp the situation as things have been going, we want also to participate in this analysis of the farm problem, in the study of the anatomy of the farm, and the study of pathological conditions, and, where we can, prescribe. But in this work our hope is that we shall have no work that is not your work; that we shall work together as one. We are working now together as one in Minnesota where the work we are doing is the work Professor Boss is doing; similarly in Illinois, and all of the states. But our problems are not just state problems, they are regional problems. It is important that the work in Iowa, Illinois, Indiana and Ohio be fitted together so that materials collected can be used as a regional study as well as a state study, and for that reason we need to get together and keep step.[97]

Reports of Committees

The following committees presented . . . reports . . . .

1. Objectives in farm organization research — Prof. Boss, Chairman, P. E. McNall, H. C. M. Case, and H. R. Tolley.
2. Use of complete farm accounts in farm organization studies — W. E. Grimes, Chairman, F. L. Morison, and O. A. Juve.
3. Use of enterprise costs in farm organization studies — L. A. Moorhouse, Chairman, O. G. Lloyd, and R. H. Wilcox.
4. Use of the farm survey method in studying farm organization problems — C. L. Holmes, Chairman, W. D. Nicholls and J. W. Tapp.
5. How to make results most useful — R. E. Willard, Chairman, C. G. Worsham, and E. Rauchenstein.
6. Cooperative relations — R. E. Willard, Chairman, and R. H. Wilcox.[98]

The report of the committee on objectives called for the study of:

. . . the effect of changing economic conditions on the relative prices and cost of different farm products as affecting present and future production.

To learn with reasonable accuracy climatic, soil and economic boundaries of areas where certain of the agricultural products can be produced either alone or in combination with other products and to determine the effect of changing price levels. . . .

To learn the limitations and possibilities of various crops, livestock, and other enterprises in determining the type of farming for an area, taking into account world, regional and local demands. . . .

To determine the proportions of land, capital, and labor that should

[97] H. C. Taylor, "Present Objectives of Research Work in Farm Organization and Cost of Production," *Conference of Research Workers,* pp. 2–4.
[98] *Conference of Research Workers,* p. 6.

be combined with the labor and management of the farmer and his family to bring the greatest financial return consistent with a reasonable degree of comfort and satisfaction to the farm family.

To determine the kinds and qualities of enterprises to use in organizing a farm business under stated conditions of production and marketing.

To determine the degree of intensity advisable under various economic conditions.[99]

The following report of the committee on complete farm accounts is quoted in full because it is indicative of the thinking of the time on this subject:

Use of Complete Farm Accounts in Farm Organization Studies

The questions confronting the investigator in the analysis, interpretation, and presentation of complete farm accounts, in such a way that farm organization may be improved, involve the study of the various enterprises and practices to determine the more desirable enterprises and practices which are consistent with the standards of the farmer. In accomplishing this, analyses should be made along the following lines:

I. The Desirability of Various Combinations of Enterprises as Judged by the Following Factors:
   1. The relative profitableness of different enterprises as measured in returns for the labor and other factors of production employed.
   2. The inter-dependence of enterprises. This can be shown by the distribution of the labor, both man and horse, and by studies which cannot always be expressed in terms of figures. These studies would include alternative uses of land, the utilization of by-products, and the employment of labor which would otherwise be idle.
   3. The study of competing enterprises.
      a. The labor distribution will give the labor requirements at times when two enterprises compete, and indicate the extent of the competition for labor.
      b. The labor and material requirements will show the competition for labor, land and capital.
   4. The relationship of the various enterprises to fixed expenses. Horse labor is an example of a cost that tends to be a fixed expense. Analysis of the complete accounts will show the amount of horse labor used by various enterprises and the distribution of this horse labor throughout the year, thus indicating ways in which the fixed expenses of horse labor may be distributed more economically. Land charges, charges for machinery and buildings, taxes, etc., are also fixed expenses.
   5. The relation of enterprises to the utilization of farm labor.
      a. The proportion of the total labor required by the farm or by a particular enterprise that is performed by the operator and unpaid members of his family.
      b. The proportion of the total labor that is regular hired labor.
      c. The proportion of the total labor that is seasonal hired labor usually paid by the day or by the piece.
   6. The ratio of cash expenses to the total cost of producing various products:
      a. In the case of direct charges.
      b. In the case of indirect charges, such as machinery costs, use of buildings and overhead. Complete cost records constitute the most satisfactory source from which these data may be secured.

[99] *Conference of Research Workers,* Report of Committe number 1.

7. The relationship existing between the farm as a home and the farm as a business and its effect on:
    a. The size of business.
    b. The kind and amount of labor available for farm work.
    c. Additional capital necessary, such as a tenant house or other facilities for hired labor.

II. The Selection of Farm Practices To Be Used With Particular Enterprises as Judged by the Following Facts:
1. The influence of size of crews on economy of operation.
2. Interchangeability of labor and capital as in the case of substituting machine methods for hand methods, or one type of machine for another.
3. The type of power as, for example, horses or tractors.
4. The effect of the time of performing operations on (a) The amount of work done in a given time, and (b) the quantity and quality of the product produced.
5. The relative results secured from different practices with livestock and with crops.
6. The effect of size, shape, location and topography of fields on farm practices.
7. The effect of the location and arrangement of buildings and lots on farm practices.

III. Complete Cost Accounts Provide Conditions Which Make Possible Better Judgment Concerning the Ability, Purposes and Aims of the Farm Operator Because of—
1. More intimate long-time acquaintanceship.
2. More detailed knowledge of the favorable and adverse circumstances.
3. More frank relationship between the operator and the investigator permits a more thorough and accurate judgment of the operator's ability.

These conditions existing in the keeping of complete cost accounts give the investigator a better insight into the farmer's ability in:
1. Performing farm operations.
2. Selecting farm practices and enterprises.
3. Directing farm labor.
4. Buying and selling.

IV. Other Contributions of Complete Cost Accounts to Farm Organization Studies.
1. Complete cost accounts give more complete and accurate information on the contributions of the farm toward the family's living.
2. Complete farm accounts give the investigator a thorough knowledge of community practices, customs and conditions and show their influence on the organization of the farm business.
3. Complete cost accounts give detailed and accurate statistics, such as labor and material requirements, for all farm enterprises included in the farm businesses studied.

Respectfully submitted,[100]

Combining Cost Studies With Price Studies

The desire to integrate the cost studies with the price studies in farm management planning led the Bureau of Agricultural Economics to arrange for a member of the staff, Jesse W. Tapp, to work with George A. Pond, of the Minnesota Agricultural Experiment Station, in 1922–23, on some of the newer data which had been collected by

[100] *Conference of Research Workers,* Report of Committee number 2.

the route system under the joint sponsorship of federal and state agencies. This resulted in the preparation of a bulletin[101] which more nearly provided the basic facts and the methods of calculating the answer to the question Willet M. Hays had in mind than had any of the preceding bulletins. It marked so important a step forward[102] in farm management planning by the budgeting method that it is worth while to include the high points of its contents.

The bulletin assumes a dynamic economic world in which the manager of a farm or of any other business must constantly be alert to changing conditions. As a background, therefore, the history of the area was given to show the changes which had been taking place. The report then presents a statement of the amounts and distribution of labor and materials required by the various enterprises and the time of year of the demands for labor of each enterprise. This done, examples were given to indicate the use of these basic facts in calculating which combination of enterprises will show the greater net profit.

In the discussion of the combination of crops in the rotation, account was taken of the conservation of fertility and the need for feed for the livestock enterprises. The results are stated in differences in prospective returns on the adjusted basis when compared with previous practice.

That bulletin presented the daily distribution of the labor requirements of each enterprise. The seasonal demand for labor was charted by days for the crop and by longer periods for the livestock enterprises where there is little change from day to day in the labor requirements and where the work goes on regardless of the weather. In that report the daily or monthly distribution of labor is charted and Figures 21 and 23 bring together the results of the study of the chronology of labor utilization for crops and for the whole farm.

The authors then set forth the principles of the choice and adjustment of crop and livestock enterprises:

> Basic data, such as have been presented, may be used in planning a well-balanced farm-organization scheme, with a view to securing the maximum returns from farming. When used in this way, they must of necessity be combined with data on normal yields and normal price trends or probable future prices. The farmer is continually confronted with the problem of apportioning his resources among the different lines of production. He must decide how many acres of the different kinds of crops to grow and the number and kinds of livestock to keep. His objective in organizing his business should be to keep his enterprises adjusted to the conditions of the market in such a manner as to yield maximum results. This adjustment can not be made once for all time. As the expenses of production or the prices of products change readjustments must be made to meet the new conditions. . . .

[101] G. A. Pond and J. W. Tapp, "A Study of Farm Organization in Southwestern Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 205 (University Farm, St. Paul, 1923). Also published as U.S.D.A., *Bulletin* 1271 (Washington, 1924).

[102] Thomas F. Hunt introduced farm management planning into his class work in rural economics. See T. F. Hunt, *How To Choose a Farm* (New York: The Macmillan Company, 1906), pp. 111–28.

In determining the combination and proportion of farm enterprises the following characteristics of the problem are important:

1. The several lines of production of the farms in this locality vary in their demands upon the resources of the farmer.
2. The succession of a large number of different operations from season to season on the farms in this area necessitates frequent labor adjustments.
3. Certain nonmarketable resources must be utilized when and where they are available.
4. The use of intermediate products presents a complicating factor.

The several lines of production on the farms in this locality vary in their demands upon the resources of the farmer. — The different crops require different amounts of man labor, horse labor, land, and managerial ability for a given volume of product. For example, on 18 farms in 1921 averages of 19 hours of man labor and 42 hours of horse labor per acre were used in the production of corn. On the same farms, averages of 7 hours of man labor and 16 hours of horse labor were used in the production of oats. Likewise, the different kinds of livestock require varying amounts and qualities of labor, feed, shelter, and other requirements.

There are also wide variations in the time at which and the periods during which these various requisites are demanded by the different kinds of crops and livestock. Most crops require attention only at certain definite seasons of the year and these seasons are different for the various crops. For example, the seed-bed preparation and seeding of oats are ordinarily completed several days before the time for final preparation and planting of corn. Then late in July after the corn cultivation is completed comes the oat harvest. Thus the labor, horses, and machinery of the farmer are usually employed more economically in a system of diversified farming than in a single-crop system, even if the crop needing attention at one time gives a lower return than that requiring attention at another time.

On some crops the labor is used in more or less regular amounts over a long productive period. In some cases, notably with the small-grain crops, the work comes in two or three short periods of seed-bed preparation, planting, harvesting and threshing. Crops which require attention at the same time of the year may be regarded as *competing crops*. The spring grains — oats, barley, and spring wheat — are examples of competing crops in this area. They require about the same amount of man labor, horse labor, and tools at approximately the same time.

One enterprise is *complementary* to another when it makes a definite contribution to it. Crops and livestock are frequently mutually complementary, the crops furnishing feed for the livestock and the livestock in turn furnishing fertility for the crops. Complementary relations are evident between legumes and other crops included in a rotation. The legumes help to build up the soil for the production of the other crops in the rotation, and frequently the legumes receive protection from the small grain when used as a nurse crop.

Supplementary enterprises are frequently brought in to reduce the burden of expense of the enterprises supplemented. The supplementary enterprise may reduce the idle time, idle land, idle machinery, etc., left over after the major enterprises have been properly conducted. The object is always to get the fullest utilization of the requisites of production, and since such an enterprise utilizes supplies of labor and nonmarketable feeds which would otherwise be wasted, it may give a relatively low return and still be profitably included in the farm organization.

The demands of different crops and kinds of livestock frequently conflict

in certain respects, although they are complementary or supplementary in other respects. Corn and alfalfa compete for labor during corn cultivation in June and frequently again at silo-filling time. However, the silage and alfalfa are supplementary as dairy feeds and this may more than compensate for the conflicting demands for labor. These conflicting, complementary, and supplementary relationships of enterprises are not susceptible of exact measurement. However, their importance in obtaining the most profitable utilization of resources of a particular farm is obvious.

The succession of a large number of different operations from season to season on the farms in this area necessitates frequent labor adjustments. — The operations on a general farm, unlike those of a factory, are not standardized and can not be reduced to routine. The succession of a large number of different operations from season to season renders any general plan of division of labor, specialization by tasks, standardization of operations, etc., practically impossible. These different operations require different conditions as to soil, weather, climate, etc. Thus, it is possible to perform certain of the operations when weather or other conditions are unfavorable for the performance of others. In this way some of the difficulties due to encountering constantly the exigencies of weather in farm work are eliminated. For example, a heavy rain in June may stop corn cultivation for a time. Meanwhile the work of mowing hay may proceed with very little interference. This characteristic must be kept in mind both in the organization and day-to-day management of resources.

Certain nonmarketable resources must be utilized when and where they are available. — At various stages in the conduct of their business the farmers in Cottonwood and Jackson Counties find themselves in possession of certain nonmarketable feeds, nontillable pasture, and idle time of man and horses. These are worth just what the operator can make them add to the value of the product of the farm by proper utilization. A noteworthy example of this is found in the case of the labor supply on many of these farms. When the crop labor constitutes the major portion of the farm work, there is generally a surplus of labor during the winter months when little crop work can be done. Unless an enterprise is introduced which will provide productive employment during these months this labor will be wasted. Such labor may get a lower return than that spent on the major enterprises, but nevertheless the total returns of the farm will be increased by making the best use of it possible.

Similarly, on many of these farms there are supplies of corn stover, skim milk, straw, wild hay, or other frequently nonmarketable feeds, which must be used on the farm in connection with other feeds or allowed to go to waste. The existence of a large amount of nontillable pasture may justify the keeping of livestock which give a relatively low return, but which afford the best market for this particular resource.

The use of intermediate products presents a complicating factor. — In the system of general stock and grain farming common to this region, intermediate products appear at various stages in the production process. This requires decisions on the matter of using these intermediate products in further production or marketing them directly. Thus a producer of hogs who grows his own feed must decide whether the corn, oats, and other feeds are to be sold on the market or through the hogs. The milk or butterfat producer must make similar decisions. The conduct of these livestock enterprises constitutes a method of marketing the products of other enterprises.

Such decisions are rendered more difficult by reason of the effect of the fertility by-product from marketing these feeds through livestock. The value of this fertility added to the soil depends upon the increase in value of the future product of the soil, and it is therefore impossible to evaluate accurately

this fertility by-product of livestock. Wherever livestock constitute an important part of the farming business, due consideration must be given to the matter of producing such feeds as can be produced more economically than they can be purchased.

Statement of the Principle of Choice

Any one or all of the above-mentioned characteristics of farm organization problems may be present on particular farms. The problems are frequently complex and can not be solved by some simple formula.

Having in mind these characteristics of the problems on his particular farm, the operator should choose such enterprises and in such proportions as can be combined into a well-rounded organization that will give him the best return for his supply of labor, land, equipment, and managerial ability.

This is usually accomplished by choosing the one or more major enterprises that will add most to the net returns, and then supplementing the organization with such other enterprises as will give a fuller utilization of the factors and procure a return sufficient to reward the operator for the additional managerial effort put forth.[103]

The authors gave examples illustrating the way in which the general principles and the basic data can be applied in specific cases.

. . . Comparisons are made between the results secured from the present organizations and the probable results from proposed organizations.

In making these comparisons between organizations, it is also necessary to determine the differences in costs of extra hired labor, seed, twine, and other materials which do not constitute a part of the regular supply of resources. This analysis is based on the theory that when choice of enterprises is the objective, only those costs and returns which will be affected by the choice need be considered.[104] Thus adjustments in the cropping system or the kinds of livestock being kept may usually be considered without regard to the question of overhead expenses, land rent, or other charges which are not altered by the choice.[105]

The student of the problem of farm reorganization based upon accounting and supplementary data should study the details of the illustrations given on pages 83–100 of the bulletin.

In illustrating the way in which the basic accounting data can be used in planning the reorganization of a specific farm, the inventory of resources and the organization of the farm are given in adequate detail so that the farmer can see whether or not he is fully utilizing his resources, particularly his man and horse labor, and whether the crops he is raising are yielding the potential maximum profit. This led to the following conclusion:

. . . The small grain acreage is out of proportion to the corn acreage from the standpoint of production of feed for livestock and balanced rotation of crops.

The acreage of corn and tame hay can be increased without hiring any additional labor or increasing the number of work stock. The amount of

[103] G. A. Pond and J. W. Tapp, "A Study of Farm Organization in Southwestern Minnesota," U.S.D.A., *Bulletin* 1271, pp. 79–82.

[104] For a further elaboration of this point, the reader is referred to H. C. Taylor, "The Objectives in Agricultural Cost Accounting," *Journal of Farm Economics*, 5:65–78 (April 1923).

[105] G. A. Pond and J. W. Tapp, "A Study of Farm Organization in Southwestern Minnesota, U.S.D.A., *Bulletin* 1271, p. 82.

pork produced was low in proportion to the amount of skim milk available for use. More pork could be produced without increasing the number of brood sows by raising fall litters as was done one year on this farm, but this would necessitate the production or purchase of more corn.[106]

The authors then proposed a reorganization which cut down the small grain crops by 26 acres and added 17 acres of corn and 8 acres of clover and timothy. "This change provides more feed for livestock. The net returns from salable crops are slightly reduced, but the reduction in extra material costs more than balances this decrease."[107] The effect of the changes on the returns is an increase in the net income of $203. A second example is presented in which the purpose is to make more effective use of the labor force. It is noted:

> . . . with the exception of the corn husking period there is considerable room for expansion without necessitating the hiring of any additional labor. In order to have a better balanced organization and to obtain a fuller utilization of his resources, this farmer rented 30 acres of additional land during one year of this study. This land was used for grain production. . . .
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> The 30 additional acres of land is distributed as follows under this second reorganization plan: Corn, 14 acres; oats, 8 acres; clover and timothy, 5 acres; pasture, 2 acres; and corn fodder, 1 acre. There is no change in livestock except the increase of pork production to 30,000 pounds by raising fall litters from part of the brood sows. The same feed requirements per 100 pounds for pork production have been assumed. . . .
>
> This expansion of the business involves no change in resources but requires approximately 750 additional hours of man labor. Of this, 225 is for corn husking which has been covered in a cash allowance for husking so the net increase is only 525 hours. On account of the better seasonal distribution of labor this could ordinarily be handled by the present supply of labor by a slight increase in length of working day at certain periods. Only in case of a piling up of different kinds of work as the result of an unfavorable season or other unforeseen emergency would it be necessary to hire extra labor. A careful day-to-day management of the labor program would help materially in avoiding the necessity of hiring extra labor at any time. This plan greatly reduces the possibility of shortage of feed for the livestock being kept, and at the same time, gives a net increase in returns of nearly $700 over the present plan of operation.[108]

J. W. Tapp also participated in the preparation of a similar bulletin prepared co-operatively by the U. S. Department of Agriculture and the Kansas State Agricultural College.[109] The reader should consult that bulletin for examples of the application of the method to the winter wheat region.

It will be recognized at once that the further mechanization of wheat production, particularly by the shift from horses to the tractor and from the binder to the combine has made many of the basic data on unit requirements obsolete, but the importance of these

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[106] G. A. Pond and J. W. Tapp, "Southwestern Minnesota," p. 87.
[107] G. A. Pond and J. W. Tapp, "Southwestern Minnesota," p. 87.
[108] G. A. Pond and J. W. Tapp, "Southwestern Minnesota," pp. 89–91.
[109] W. E. Grimes, J. A. Hodges, R. D. Nichols, and J. W. Tapp, "A Study of Farm Organization in Central Kansas," U.S.D.A. *Department Bulletin* 1296 (Washington, 1925).

bulletins lies rather in the fact that they were pioneering in the use of farm records, cost analysis, and the agricultural outlook data in planning farm operations in the light of given conditions on a specific farm. These projects were formulated on the assumption of the farmer's presence in a dynamic world where continuous year-to-year planning is essential if that farmer is to keep his business in adjustment with the changing elements of costs and prices. The specific facts given in the bulletins were soon obsolete — the facts must continually be reviewed and, in some measure, assembled afresh every year on every farm for which the plans for the next year's operations are being projected.

G. W. Forster went to North Carolina in 1923 to help develop the work in agricultural economics in that state. While with the U. S. Department of Agriculture he had participated in the conferences in which the plans were developed for the Minnesota study in farm planning by the budgeting method. In North Carolina Forster applied the same principles and techniques of farm planning. He developed what he called "standard organizations" for farms of different sizes. The results of his study appeared in a bulletin dealing with farm planning for greater profits.[110]

The discussion in that first North Carolina research bulletin on farm organization states the economic principles to be followed in selecting and organizing the enterprises that can be combined most profitably on a given farm. With the principles in mind and the specific facts based upon cost accounting, and the available facts relating to prospective marketing conditions, on hand, that bulletin presents a plan of organization for the future and estimates the financial results of the revised plans which are compared with the results obtained by the previous organization.

Thus the pioneering in the use of the findings of cost and market research in farm planning was progressing in Minnesota, Kansas, and North Carolina in co-operation with the U. S. Department of Agriculture. The cost accounts and the price curves were more and more accepted as the basis for current managerial decision. Thinking farmers have always based their plans for the future on prophesy. The purpose of budgeting which makes use of accounting and price studies is to give greater accuracy to the forecasting of the probable outcome of different plans of action.

Since the results of these pioneer projects in planning were published, much has been done. This work has been called "budgeting" by some writers, "standard organizations" by North Carolina, "individual farm planning" or "balanced farming" by others. Under whatever name it is promoted, it has been useful insofar as it has been possible to assemble facts which enable the farmer to look ahead and

[110] G. W. Forster, R. J. Saville, and J. B. Hutson, "Profitable Farm Organizations for the Coastal Plain of North Carolina," North Carolina State College of Agriculture and Engineering, Bureau of Economic and Social Research, *Research Bulletin* 1 (Raleigh, 1926).

pass judgment more accurately on how to adjust his farming operations in a manner most likely to yield optimum results. The unique feature of the North Carolina budgeting plan lies in the fact that no attempt was made to get leading farmers to work out a plan based upon accounting and market data with the hope that others would follow the leaders. Instead, this plan called for farm economists to study area facts and set up a "standard organization" for farms of different sizes and for types of farming. The plan's sponsors hoped thereby to get farmers to plan their individual programs, following more or less closely the selected standard organization and keeping in mind the conditions on their own farms.[111] In doing this the farmer must hold in mind a plan of operations extending through a series of years, certainly for as many years as is required for one complete rotation of crops.

In Minnesota, in North Carolina, in Kansas, and in the U. S. Department of Agriculture, those pioneer efforts were looked upon as mere beginnings. Minnesota continued the work by obtaining the basic data for farm budgeting and by illustrating the use of these data in planning for the various types of farming in the state in a series of bulletins.[112]

In commenting on the budgeting work in Minnesota, G. A. Pond said:

> . . . We have followed the pattern presented in these bulletins, in our teaching work in the institution. We use them in both graduate and undergraduate instruction. The budget approach also has considerable place in high school curricula and special hand books have been prepared for the purpose. For some time we had a special project in farm planning in South East Minnesota in which we applied the budgeting method to a considerable group of farms as demonstrations. The Extension Division has done considerable work under the general heading of farm planning in which they have followed more or less the procedure outlined in these bulletins. . . . You will recall an article by yourself in an early number of the *Journal of Farm Economics*[113] applying the substitution method to a comparison of re-

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[111] In revising and commenting upon this statement, G. W. Forster said, in a letter addressed to H. C. Taylor, Dec. 12, 1946, "I hope you will point out your own contribution to the theory of capacity and efficiency. It was your insistence on these two elements of the factors of production . . . which led me to approach the problems of farm management in a more realistic manner. I wanted to develop the standards in such a manner as to fit managers with different capacities. . . . the budget or standard method has been used widely. It is used in almost every state as a method of approach to problems of farm organization and management. The work of the Farm Security Administration and other Federal organizations working directly with farmers, such as the Soil Conservation Service, could not have been done without the use of this method. . . . They may not always recognize what they are using, but it is the standard method."

[112] G. A. Pond, "A Study of Dairy Farm Organization in Southeastern Minnesota," Minnesota Agr. Exp. Sta. *Technical Bulletin* 44 (University Farm, St. Paul, 1926).

G. A. Pond, G. A. Sallee, and C. W. Crickman, "An Economic Study of Crop Production in the Red River Valley of Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 282 (University Farm, St. Paul, 1931).

G. A. Sallee, G. A. Pond, and C. W. Crickman, "An Economic Study of Livestock Possibilities in the Red River Valley of Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 283 (University Farm, St. Paul, 1931).

G. A. Pond, G. A. Sallee, and C. W. Crickman, "Planning Systems of Farming for the Red River Valley of Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 284 (University Farm, St. Paul, 1931).

[113] H. C. Taylor, "The Objectives in Agricultural Cost Accounting," *Journal of Farm Economics,* 5:65–78 (April 1923).

turns between oats and barley. We have followed the same general principles of substitution in our budget bulletins.[114]

North Carolina followed up with "standards" for planning future combinations of enterprises with a view to greater profits in a series of bulletins covering various parts of the state where the types of farming were different.[115] In discussing that work in 1927, G. W. Forster and R. J. Saville said:

> Adjustment in farm organization is, therefore, one of the most effective ways of increasing net returns. To make the necessary adjustments, however, farmers need a few standard organizations as guides. . . .
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> For the purpose of developing the organization of farms which might prove to be more profitable than those commonly followed by farmers in this area, a carefully planned study of the organization of a number of representative farms was made. This investigation was conducted jointly by the Department of Agricultural Administration of the North Carolina State College of Agriculture and Engineering, and the Bureau of Agricultural Economics of the United States Department of Agriculture. The period involved was from February 1, 1925, to January 31, 1926. . . .
>
> The facts relating to the individual farms revealed that some farms having practically the same area in crops, the same labor supply, equipment, etc., varied considerably in their net returns. In any given year this variation in net returns may be, of course, caused by varying prices, to difference in management, and to other causes as well as to the way in which farms are organized. However, a study of the organization of these farms showed that a large part of the variation in net returns could be traced to the combination of crop and livestock enterprises. The organization of the successful farms, therefore, was modified and the net returns calculated. . . . The combination which gave the largest net returns, all factors being given consideration, was considered the best. Such organizations, to distinguish them from actual organizations, are designated *standards. These standards may be defined as combinations of crop and livestock enterprises for given agricultural resources, which, when based on normal yields and prices, appear to be most profitable.*[116]

A later development in Kansas is exhibited in the Kansas Agricultural Experiment Station *Bulletin* 255.[117]

The U. S. Department of Agriculture undertook to elucidate this method of planning under the title of "Farm Budgeting" in *Farmers' Bulletin* 1564, first published in 1928.[118] That bulletin was prepared by J. B. Hutson, of the Bureau of Agricultural Economics, who had co-operated with G. W. Forster in preparing the first North Carolina bulletin on farm planning.[119] In *Farmers' Bulletin* 1564, farm budgeting is described:

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[114] Letter of G. A. Pond to H. C. Taylor, Nov. 4, 1946.

[115] G. W. Forster and R. J. Saville, "Profitable Farm Combinations," North Carolina Agr. Exp. Sta. *Bulletin* 252 (Raleigh, 1927).
R. J. Saville, "Systems of Livestock Farming for the Mountain Region of North Carolina," North Carolina Agr. Exp. Sta. *Bulletin* 260 (Raleigh, 1928).
G. W. Forster, "Planning the Farm Business," North Carolina Agr. Exp. Sta. *Bulletin* 277 (Raleigh, 1931).

[116] Forster and Saville, "Profitable Farm Combinations," pp. 4, 6.

[117] J. A. Hodges, R. S. Kifer, and R. D. Nichols, "Dairy Farm Organization in Southeastern Kansas," Kansas Agr. Exp. Sta. *Bulletin* 255 (Manhattan, 1931).

[118] See footnote 120, p. 441.

[119] See footnote 110, p. 438.

. . . In farming, a budget means a plan for the future use of the land, man labor, horse work, equipment, and other resources that the farmer has to work with. It includes the plan for the system of farming for the coming year, or for a period of years. It shows the crops to be grown, the livestock to be kept, and the estimated production, receipts, and expenses from the various sources. The budget is the businesslike way to work out and record farm plans. . . .

A budget for the coming year is made on the basis of the prices, crops and livestock requirements, and production expected for the year. The method of procedure to be followed in making a budget will vary with the system of farming being considered. The budget should show, in the simplest way possible, the expected crop and livestock production, the expenses, and the receipts for the particular system contemplated. . . .

First, the acreages of the different crops contemplated and the crop expenses that appear probable should be recorded. . . . The next step is to estimate the production of the different crops and how much will be needed for seed, how much will be fed to livestock, and how much will be sold. . . . Then the number and kind of livestock to be kept should be indicated. Next the feed requirements and other expenses for the livestock should be recorded. . . . Often it will be advisable to divide this section into two parts, one showing how the feeds on hand at the beginning of the year are to be used and the other showing the feed crops to be consumed by the livestock from the harvest season to the end of the year.

At this point it will usually be advisable to compare the data showing the feeds on hand at the beginning of the year and crops to be grown for feed, with data showing the expected feed requirements. Generally, before a cropping program and livestock program are finally decided upon, adjustments will need to be made in first one and then the other until a livestock program adapted to a particular cropping program is found. When the kind and numbers of livestock contemplated have been recorded, the quantities of the livestock and livestock products expected to be used in the home and to be sold should be indicated. . . .

The expected value of the crop and livestock products to be sold and the expected cost of the purchased feeds, seeds, fertilizers, and other materials should then be indicated. . . . Next, these expected expenses and receipts should be brought together. . . . In addition to the direct costs for crops and livestock, estimates should be included on the expense side for labor, new machinery and repair, new fences and fence repair, building repair, taxes, farm insurance, and other overhead items.[120]

In 1930 Hutson published a more comprehensive statement in which he spoke of the budgeting method as "an attempt to apply a forward-looking dynamic concept."[121] Of its origin and development he said:

The development of the method described and illustrated here is not the work of any one individual but rather the result of the contributions of a large number of workers in this field. In its present form this method is imperfect and has many limitations.[122]

[120] J. B. Hutson, "Farm Budgeting," U.S.D.A., *Farmers' Bulletin* 1564 (Washington, 1928), pp. 1–3.

[121] J. B. Hutson, *Progress in Development of the Budgeting Method of Planning in Agricultural Economics, Illustrated With a Farm Organization Study in the Purchase Region of Kentucky* (Washington: publisher not given, 1930). Ph.D. Thesis, Columbia University, 1930, p. i.

[122] Hutson, "Progress in Development," p. i.

Input-Output Study

In the summer of 1922, J. D. Black had been asked to spend the summer months in the Bureau of Agricultural Economics for the purpose of stimulating thought in the Division of Farm Management and Costs. Black conducted a seminar for a selected group of men working on farm management problems. In that seminar ideas were formulated which gave promise of carrying the analysis of farm accounting data into the fields of intensity of feeding, fertilization, seeding, cultivation, etc. These were phases of the economics of farm management which had been talked about for a long time, but on which little had been done in working out answers to questions or even in developing methods of finding answers.

At about the same time that J. W. Tapp, of the Bureau of Agricultural Economics, and G. A. Pond, of Minnesota, were preparing the bulletin on farm organization,[123] which pioneered the farm budgeting idea in the United States and in which the choice, magnitude, and the combination of enterprises was the central theme, M. J. B. Ezekiel was sent to Minnesota by the Bureau of Agricultural Economics to work (1922–23) with J. D. Black on the analysis of the problems involved in efficient operation once the enterprises had been chosen. As a result of Black's work in the Bureau of Agricultural Economics and of Ezekiel's work at Minnesota with Black, an input-output bulletin was issued in September 1924.[124] In marking out the field to be attacked, the authors said:

> The success of the farm business may depend as much upon the details of the operation of the major enterprises as it does upon the combination of the enterprises. Farm-management investigations have placed much emphasis upon the combination of enterprises; whereas the adjustment of the details of each farm enterprise has received relatively little attention, largely because of the difficulties of the necessary economic and statistical analysis. The purpose of this bulletin is to present a method of studying the effect of variations in details of farm practice upon the profitableness of the farm business.
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> In any one region, farmers differ widely in the methods and practices which they use in handling specific farm enterprises. To what are these variations due? Partly to differences in conditions peculiar to individual farms, and partly to differences in the adjustments made to existing economic conditions. . . .
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> What is the relation between these variations in methods and practices and the product obtained? Many things are used in growing any farm product — materials, labor, machinery, land — to mention only a few. The net contribution of each of the productive factors must be measured in determining the effect of the variations in any one.
>
> Furthermore, farming is conducted under the conditions of diminishing returns. This means that it can not be assumed that 400 pounds of fertilizer per acre will have twice the effect of 200, or that 20 pounds of corn fed to a

[123] G. A. Pond and J. W. Tapp, "A Study of Farm Organization in Southwestern Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 205 (University Farm, St. Paul, 1923).

[124] H. R. Tolley, J. D. Black, and M. J. B. Ezekiel, "Input as Related to Output in Farm Organization and Cost-of-Production Studies," U.S.D.A., *Department Bulletin* 1277 (Washington, 1924).

beef steer per day will produce twice as much gain as 10 pounds. Hence, measuring the average effect per unit of each productive factor is not sufficient; to be adequate, any study must show the effect upon output of each particular variation in input.

Changes in economic conditions frequently cause wide fluctuations in the relative costs of the various productive factors and in the prices of farm products. Hence, the most advantageous adjustment of the practices employed in each enterprise can not be made once for all; they must be constantly altered to meet changing price conditions, if the best results are to be obtained. Furthermore, while we can actually measure only what has already happened, the farmer is concerned not only with what has been most profitable in the past, but with what is the most profitable now and will be in the future. To be adequate, the analysis must therefore be so devised as to assist him in making the shrewdest possible adjustment to coming conditions.

The method of study presented in this bulletin begins with a detailed analysis of the variations in methods and practices (*input variations*), and the effect of these variations upon the product (*output per unit of input*). The basic data thus obtained are then used to determine the *least-cost combination* of inputs by applying value rates to the inputs and outputs at various combinations of the input factors. The least-cost combination is that combination which will produce the product at the least cost per unit of output.

However, since farmers are interested in obtaining the greatest total profit rather than the greatest profit per unit of product, one further step is necessary to take into account the volume of product as well as the profit per unit. Considering the value of the product per unit and the volume of production at various combinations of the input factors, it is possible to estimate the total profit from the enterprise for different input combinations and thus to determine the *most profitable combination* of input factors.

The practices in the handling of a specific enterprise, dairying for example, may be considerably altered without changing the general balance of the farm enterprises or necessitating any change in farm organization. To the extent that this is true, studies of the individual enterprises may yield valuable information as to profitable readjustments in the handling of specific enterprises. The method presented in this bulletin is believed to be particularly promising for studies within this range.

Beyond a certain point, readjustment of an individual enterprise necessitates readjustment in the whole farm organization. Thus, although it is possible to make material changes in the feeding practices for dairy cattle without affecting the balance of the farm enterprises, it is not logical to consider changing the size of the herd without taking into account the effect of the change upon the other farm enterprises. In this bulletin, the discussion of *combination of enterprises* points out the difficulties in the way of thus determining the best organization, without attempting to solve the problem completely. Until this phase of the analysis is developed further, any conclusions reached by studies of the greatest-profit combination of inputs for given enterprises must be limited to such changes from existing combinations as will not materially affect the balance of the farm enterprises. . . .

Farm organization[125] bulletins of the last few years have usually published data as to the physical amounts of the various cost elements "required" in the production of various products. These data are valuable in many ways, but without further analysis they fall short of their highest usefulness. It is believed that the method of analyzing input variations presented here will make them more useful.[126]

[125] The term "organization" is here used as an equivalent of "farm management."
[126] Tolley, *et al.*, "Input as Related to Output," pp. 1–3.

The authors then presented facts regarding the variations in input of fertilizers and seed in potato production with a view to obtaining a clear mental picture as to what takes place as additional amounts of fertilizer or seed are used on a given area in potato production, and with a view to noting the way in which the law of increasing and diminishing returns operates. The effect of variations in the amount of feed per day given to beef cattle was likewise studied in order to note the results in terms of pounds of beef. Another study related to labor inputs for wheat production. Having noted the variations in input, the authors studied the output per unit of input of each of the elements of input, which illustrates the law of increasing and diminishing returns in crop production and in feeding livestock.

The next step was to find the least-cost combination of inputs which should coincide with maximum profit per unit of product, but not necessarily the maximum total net profit for the farmer, for the reason that total profit is the multiple of profit per unit of product and the total number of units. The maximum total profit may come from an increase in the number of units even at an advance of costs per unit if the increment due to producing more units is greater than the increment in cost.

> In general, so long as there is no change in the size of an enterprise, as measured in physical terms — cows or acres — the most profitable combination can not be less intensive than the least-cost combination. But when there is change in the magnitude of the enterprise, this no longer holds true. Then the total profit from the enterprise must be considered, and the further complication of the effect on the entire combination of enterprises must be taken into account.[127]

In deciding on the proportion of grain and roughage to feed beef cattle, the relative prices of grain and forage may be the determining factor.

> The problem of the most profitable combination, like the problem of the least-cost combination, is probably not one that can be solved directly by any form of investigation. The probable variations in input per unit of output as input changes can be determined by investigation, but the rest is purely a synthetic process to be performed by each individual producer on the basis of probable cost rates and prices. The variation in input per unit of output as more volume is handled by any manager may be determinable in a general way for any one system of farming; but in the last analysis it is purely an individual problem for each farmer, depending entirely upon his capacity and efficiency as a manager for the particular kind of production in question and the particular kind of cost factors available for his use. . . .
>
> It will be remembered, however, that the net gains from the various inputs include whatever effect differences in quantity or quality of management which are correlated with input may have upon output per unit of input. Hence, variations in management are partly included in least-cost inputs as above determined.[128]

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[127] Tolley, *et al.*, "Input as Related to Output," p. 33.
[128] Tolley, *et al.*, "Input as Related to Output," pp. 34–35.

The authors indicate how much more complicated the problem is because of the farmer's necessity of combining enterprises:

The difficulties in this problem are, (1) the adjusting of inputs per unit of output as given in tables and curves previously presented to fit variations in the proportions of the enterprises; (2) the adjusting of cost rates, especially for man labor, horse labor, and land, to fit varying proportions of enterprises; and (3) the measuring of the values of contributions by one enterprise to another. These difficulties are so nearly insuperable as to make any highly accurate choosing of enterprises by this method impossible. Since, however, there is such a large element of forecast in the whole determination — forecasts of cost rates, forecasts of prices, etc. — an error in any of the three particulars just named may not be so serious after all.

The fundamental data upon which the study of the combination of enterprises is based [are] the same input data upon which least-cost and most profitable combinations of input factors are based.[129]

A farmer ordinarily has a considerable range of choice as to cultural methods, equipment, feeding rations, and the like. Given proper data as to outputs per unit of input for each of two alternative practices, all that the farmer needs to do is to apply probable cost rates to the input data for each and see which turns out a unit of output at lowest cost at its least-cost combination. If, for example, he knows how much input of each of two possible balanced rations goes with various outputs of milk (or butterfat or both combined) at least-cost combination on his farm, it being assumed that the inputs of the other cost factors are the same, he merely has to apply the cost rates for the two rations to the units of input and locate the least-cost combination for each under the limitations prevailing upon his farm.

The principal difficulty with this procedure is that the inputs of the other cost factors do not always remain the same—one ration may take more labor than the other, one cultural practice may take more man labor, horse labor, and equipment than the other. In the case of comparing farms with and without tractors, the whole farm organization must be taken into account, for the horse-labor cost rates charged to the enterprises using horse labor in either case are seriously affected thereby, and the acreage of oats and hay as feed crops for horses may be reduced. Most of these difficulties, however, can be handled in a fairly satisfactory way.

Planning a Farm Business

Considerable use has always been made of "requirements" as to quantities of feed necessary per head of livestock, labor hours per acre of various crops, and other similar data, in attempts to plan a well-integrated farm business. It will now be obvious that there can be no definite "requirement" for most of these things. What is needed instead are data showing how outputs change per unit of input, and vice versa, so that the input and output data used will more accurately forecast what will be the situation under the proposed plan of organization.

Much of the planning of the farm business must be for a considerable period of time; for example, the acreage, the buildings, the farm layout. All that can be done for such features of the plan is to guess at probable cost rates, yields, and prices and figure on the basis of these.

Other parts of the plan, such as the number of cows to be kept, the acres of corn to grow, can be calculated at much shorter range. Plans based on input variations and fitted to the particular conditions of the farm should give a much closer forecast of actual results than plans based on inflexible requirements.[130]

[129] Tolley, *et al.*, "Input as Related to Output," pp. 35–36.
[130] Tolley, *et al.*, "Input as Related to Output," pp. 38–39.

That input-output study carried the analysis of the farm management problem to the point where the questions of intensity of culture and choice and combination of enterprises are dealt with. Thus, 22 years after Willet M. Hays started the cost of production work at the Minnesota Agricultural Experiment Station, the set of questions which he asked accounting research to answer[131] had been covered.

The input-output study presents a brilliant analysis of the complicated interrelated problems of adjusting all of the elements of the farm undertaking in such a manner as to yield maximum profits for the farmer. It leaves the impression, however, that the problem is too complicated for simple, comprehensive answers. Yet one cannot read through the analysis without having a better understanding of the elements which must be considered in passing judgment upon the multitude of questions which are continually confronting the farmer. The better the data that are provided the farmer, the more likely is he to judge correctly. The data, however, have to do not only with the physical responses of soil and livestock to seed, fertilizers and feeds, but also to the market situation as it is with respect to costs and as it is becoming with respect to prices. The practical farm manager uses his best judgment, based upon his information and experience, in endeavoring to approximate the answers to these complicated questions without complicated computations, such as Black and Ezekiel were making. The better operators are better because their answers to these questions, based upon experience, yield better results than do the answers to these questions arrived at by inexperienced or immature operators, or by operators of lower native intelligence.

[131] W. M. Hays and E. C. Parker, "The Cost of Producing Farm Products," Minnesota Agr. Exp. Sta. *Bulletin* 97 (St. Anthony Park, Ramsey County, 1906), pp. 21–22.

17.

The Outlook Approach in Production Adjustments

THE AGRICULTURAL DEPRESSION of the early 1920's, which brought changes in relative prices of farm products as well as a general lowering of the farmer's purchasing power, gave the signal for renewed emphasis on the study of the dynamic forces which bring about price changes — and for a study of the possibilities of a reshaping of agriculture to adjust supply to demand on the basis of a satisfactory price.

Hitherto studies in farm management by the cost accounting and farm management survey methods had assumed stable price relations. The upsets in price relations at once suggested that farm management should no longer be looked upon as static, but that it should be studied in the dynamic setting — in the setting where changing price relations are to be anticipated. Low prices and sluggishness of the market for farm products in 1921 suggested at once that the seat of the difficulty was in the market rather than on the farms, and, in fact, marketing conditions had greatly changed, especially with respect to foreign demand.

In answer to the question of what farmers should do about the situation, the Chief of the Office of Farm Management and Farm Economics of the U. S. Department of Agriculture made two suggestions.[1] One suggestion related to reducing costs of farm operations. Expenditures were to be reduced by repairing old machinery instead of buying new, by continuing to use horsepower instead of buying tractors, by hiring a minimum of labor, and by producing more food for home consumption. The second suggestion related to shaping production to the changed market conditions. That meant adjustments in kind, quantity, and quality of products put upon the market.

[1] H. C. Taylor, "The Adjustment of the Farm Business to Declining Price Levels," *Journal of Farm Economics*, 3:1–9 (January 1921).

In February 1921, when asked to speak to extension workers on what farmers could do to solve their price problem, that official, H. C. Taylor, said:

> This is a period when the leaders of the American farmers have a grave responsibility placed upon their shoulders. Breadth of view and common sense are valuable assets in these trying times. If there is any one thing above another to be avoided it is the danger of putting too much faith in any one outside adjustment as the remedy for the present unhappy situation and giving too little attention to what the farmers, themselves, should do. . . .
>
> As to what the Department of Agriculture, the Colleges and Experiment Stations can do to help the farmer solve the marketing problems, three-fourths consists in providing in an intelligible form the fact basis, through research and education, in the light of which the farmer must act in adjusting his farming operations to the demands of the market. The remaining one-fourth lies largely in the field of a careful study of the marketing processes and the cost of middleman services, the establishment and administration of grades and standards, controlling the quality of the middleman services and protecting producer and consumer against unfair charges for middleman services.
>
> I do not wish to be understood as minimizing the importance of co-operation among farmers. In fact, I believe that in addition to the functions mentioned above, much of the adjustment of production to the market, especially with regard to the kinds and qualities of the products, will be promoted by cooperative marketing undertakings. But, I do wish to give especial emphasis at this time to the idea that the marketing problem, so far as it is a problem of securing a satisfactory price for farm products, is to be solved largely through the adjustment of the supply to the anticipated demand and must come in large measure through the right direction of production. . . .
>
> If he is to act intelligently in the management of his farm, with a view to the right adjustment of supply to demand, the farmer must be provided with adequate knowledge of the world's probable needs and the production of the various parts of the world to meet these needs. He must know not only the quantities produced in the various countries but the comparative costs of production in each of the competing regions of the world, including the cost of putting the product on the common market. He needs to know not only the present condition of production and consumption throughout the world, but he needs to know and be able to interpret the changes which are taking place in production and in consumption in order that he may be in a position to adjust his farming to changes which affect prices and profits in given lines of production. . . .
>
> . . . Thus it is that agricultural reconstruction presents problems in the right adjustment of production to the demand, the solution of which requires the united efforts of the workers in every line of research and extension, working in close and most sympathetic cooperation with farmers and farmers' organizations. In this problem of adjusting production to market conditions the farmers themselves must play the leading part. They must pass final judgment on what is to be done. In this our rôle is that of research and education, which will give basis for straight thinking and intelligent action on the part of farmers.[2]

That idea of adjustment of production to market conditions

[2] H. C. Taylor, "Adjustments in Farm Management To Meet the Marketing Situation," U. S. Department of Agriculture, Office of Farm Management and Farm Economics (mimeo.), (Washington, 1921), pp. 14–18. Address before the Extension Directors' Conference, Feb. 1, 1921.

stimulated much thinking in the U. S. Department of Agriculture about how to gather and disseminate the facts which the farmers needed in planning their operations. In the spring of 1921, with H. C. Wallace as leader, a great deal of group thinking was carried on in the Department of Agriculture with a view to understanding the agricultural situation. Economic work in the department was consolidated with a view to greater unity of effort in helping the farmer with his production and marketing problems which were recognized as closely interrelated. On July 1, 1921, the economic work of the department was put under one management. On July 1, 1922, the Bureau of Agricultural Economics was legally established.

Early in 1923 the work had been co-ordinated in a manner to facilitate undertaking a new project involving both production and marketing. It was at that time that the agricultural outlook service was initiated. The Division of Crop Estimates of the Bureau of Agricultural Economics had assembled data regarding farmers' intended plantings of the principal crops in the spring of 1923 compared with acreages of the same crops in 1922. That study was based largely on reports received the first ten days in April from many thousands of crop reporters, giving actual acreages of crops grown on their own farms in 1922 and acres they intended to plant in 1923 on the same farms. A study of the statements made by farmers indicated that they were planning to increase their acreages of several staple crops of which prices were depressed.

Agricultural Outlook Conferences

With the full approval and co-operation of the Secretary of Agriculture, H. C. Wallace, the Bureau of Agricultural Economics took the lead in planning the first agricultural outlook conference, which was held in Washington, April 20–21, 1923. That conference was attended by representatives of most of the bureaus of the U. S. Department of Agriculture, representatives of the U. S. Department of Commerce, the Federal Reserve Board, and several representatives of nongovernmental research agencies, some of whom were connected with trade and financial organizations.[3]

[3] Representatives of nongovernmental agencies participating in the conference were:

George E. Roberts	National City Bank	New York City
Carl Snyder	Federal Reserve Bank	New York City
Wesley C. Mitchell	Bureau of Economic Research	New York City
B. M. Anderson, Jr.	Chase National Bank	New York City
E. W. Wentworth	Research Dep't, Armour Co.	Chicago, Ill.
B. W. Snow	Bartlett-Frazier Co.	Chicago, Ill.
Wm. G. Reed	Geo. H. McFadden & Bro.	Philadelphia, Pa.
Warren M. Persons	Harvard University	Cambridge, Mass.
G. F. Warren	Cornell University	Ithaca, N.Y.
F. A. Pearson	Cornell University	Ithaca, N.Y.
Thomas S. Adams	Yale University	New Haven, Conn.
H. A. Wallace	Corn Belt Meat Prod., Ass'n	Des Moines, Iowa
H. W. Moorhouse	Amer. Farm Bureau Fed.	Chicago, Ill.
H. G. Moulton	Institute of Economics	Washington, D.C.
Wm. T. Foster	Pollack Foundation for Economic Research	Newton, Mass.

See "The Agricultural Outlook," U.S.D.A., Bureau of Agricultural Economics, *Mimeographed Report* (Washington, April 1923), p. 1. (Report of conference on the agricultural outlook held at the U. S. Department of Agriculture, April 20–21, 1923.)

The Division of Statistical and Historical Research of the Bureau of Agricultural Economics prepared for the conference a summary of agricultural statistics relating to the subjects to be considered by the committees on agricultural outlook.[4]

Committees of the outlook conference were asked to prepare statements which would provide a basis for action on the part of farmers in adjusting their crop acreages in a manner to improve the relation of supply to demand. Probable foreign and domestic demand for certain products was reported on by the conference. The foreign situation, particularly the shortage of purchasing power in western Europe, was outlined in the report which said: "It was necessary in 1920–21 to submit to great price reductions in farm products in order to get Europe to take them."[5] Based upon the farmers' intentions to plant, the conference report stated: "The prospect with reference to the supply of farm products for the coming year is that there will be at least no reduction in output in the United States."[6] Furthermore, a prospect of "some increase in the production of foods in foreign countries,"[7] was indicated. The survey of available facts led to the conclusion:

> We can not, therefore, confidently offer any reason for the expectation that our farmers will meet any less severe competition in European markets during the coming year than they have met during the past year. . . . It is possible that they may meet more severe competition. The foreign outlook, on the demand side, is, if anything, less favorable to our farmers in 1923 than it was in 1922.[8]

With respect to domestic demand, the outlook was more hopeful.

> . . . in so far as the demand for farm products depends on the purchases of American families not themselves on farms that demand will be distinctly more active this autumn than it has been for the past two or three years. So far as the demand comes from American farmers themselves, no one will be in a position to make a satisfactory forecast until later in the season.[9]

For specific commodities (wheat, cotton, tobacco, corn, and hogs) the outlook was studied in the light of prospective demand and farmers' intentions to plant. Special attention was called to the precarious situation in cotton and tobacco due to the intentions of farmers to increase their plantings. Regarding tobacco, the committee stated that:

> There is nothing in the probable demand sufficient to offset the contemplated increase of 10 per cent in planted acreage; particularly when we

[4] U.S.D.A., Bureau of Agricultural Economics, *Summary of Agricultural Statistics,* prepared for the use of the Committee on Agricultural Outlook (Washington, April 1923). This summary consists of 72 pages of charts and typewritten tables which were photostated in a limited number for the use of the Committee.

[5] "The Agricultural Outlook," U.S.D.A., Bureau of Agricultural Economics, *Mimeographed Report* (April 1923), p. 5.

[6] "The Agricultural Outlook," p. 5.

[7] "The Agricultural Outlook," p. 5.

[8] "The Agricultural Outlook," pp. 5, 11.

[9] "The Agricultural Outlook," p. 13.

consider that the 1922 acreage was above the normal and that the trend of prices since 1920 has, on the whole, been downward.[10]

At the first outlook conference of statisticians and economists which met April 21, 1923, it was recommended that the Secretary of Agriculture call another such conference in July following the appearance of the special pig survey of June, and the estimates of the wheat crop for July by the Crop Reporting Board. Following this suggestion a conference was called and assembled July 11 and 12, to consider the foreign and domestic demands for farm products, the wheat situation and the corn-hog situation.

It was recognized that much additional research on supply, demand, and price would be desirable as a basis of making outlook reports. It was also recognized that studies should be made of the effect of the degree of industrial prosperity and full employment upon the demand for specific farm products. It soon became clear also that if farmers were to make changes in the use to which they put their land or the feed grown upon the land, they would need to have more information as to what alternative crops could be grown with profit and what choices there might be in the use of farm-produced feeds. Ideas of that sort guided research into new channels. Study of opportunities in local markets for the sale of food products, such as fruits, vegetables, dairy products, poultry and eggs, etc., were made in many trade areas. Numerous commodity studies were made in which both production and market demand received full attention. Each study was designed to determine whether the supply could be increased with profit, or whether it should be decreased in the interest of better prices. Those studies, when used with farm organization studies based on cost accounts, provided the basis for looking ahead and planning future cropping systems with a view to maximum profits in the light of the outlook with respect to costs and prices. Those calculations of prospective costs, returns, and probable profits, came to be called budgeting. Thus budgeting, as a farm management technique, became the keystone of the arch of which cost estimating and price forecasting are the supporting pillars.

Dissemination of Outlook Information

Thus far the outlook service has been mentioned as a means of gathering and interpreting facts. An equally important part of the work was that of making the facts known to farmers and teaching them to budget for themselves. U. S. Department of Agriculture publications, state publications, and the agricultural press were looked upon as useful channels, but the extension service, county agents, and farm management and marketing specialists were looked upon as vital channels through which outlook reports might be made effective.

Fortunately, those in charge of the extension service in Wash-

[10] "The Agricultural Outlook," p. 7.

ington and in the states caught the vision at once and in 1924 entered with enthusiasm and courage upon the task of holding state and county meetings of farmers at which the outlook report was presented and the meaning of it discussed. The purpose was to find out what farmers of a given locality could do to best advantage in readjusting their farming to meet the situation arising out of changes which had taken place and changes which were anticipated in market prices.

The outlook service was initiated without executive order or special act of Congress, and was assumed to be in harmony with the act establishing the U. S. Department of Agriculture. That act stated that the gathering and disseminating of information relating to agriculture was to be a function of the department. But no new service intended to enlighten farmers regarding price prospects could be initiated without criticism arising in the market places. It was especially helpful, therefore, when President Coolidge included in his address at the International Livestock Exposition, in Chicago in 1924, the following statement, prepared by H. C. Taylor:

> Inasmuch as orderly production is a necessary preliminary to orderly marketing, the well-informed farmer must keep himself posted, months in advance, concerning the probable production of various kinds of livestock during the coming season, as well as concerning the probable requirements of the market."

The statement was quoted on the cover page of "The Agricultural Outlook for 1925."[11]

The Chief of the Bureau of Agricultural Economics kept constantly in the foreground the idea that the outlook reports were to present a picture of the condition with respect to the probable supply and demand throughout the competing area, and the price trends which would probably result. His hope was that farmers would independently plan their farming programs, not on the basis of prices at planting and breeding time, but on the basis of probable prices at selling time, many months in the future.

In the spring of 1933, while Secretary H. A. Wallace was organizing the AAA,* he said to H. C. Taylor, "I have been told that since we now tell the farmers what to do and offer them an incentive to follow instructions, there will be no further need of the outlook service." Taylor responded, "If you are going to tell the farmers what to do, you will need better outlook information than has yet been produced, and if the farmers are to be induced to follow instructions, they will need to know what the prospects are." Wallace indicated that he agreed that the outlook service could not be discarded but should be improved.

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* Agricultural Adjustment Administration.

[11] "The Agricultural Outlook for 1925," prepared by the staff of the Bureau of Agricultural Economics, U.S.D.A., *Miscellaneous Circular* 38 (Washington, 1925), p. 1. Quoting from an address of President Calvin Coolidge, given at the International Livestock Exposition, Chicago, December 1924.

Outlook Research

Improvements in fact gathering, essential to preparing and making outlook reports effective on the farms, had been made each year after the initial report in 1923.[12] Reporting of the intentions of farmers with respect to acreages to be planted and numbers of animals kept for breeding purposes was made a regular part of the service.

INTENTIONS TO PLANT

In the report of the Chief of the Bureau of Agricultural Economics for the year ending June 30, 1923, W. F. Callander made the following statement regarding intentions to plant:

> A new nation-wide inquiry was first made in April of this year covering all important crops to ascertain the acreage that farmers intended to plant to various corps, and from the thousands of reports received a statement was published which attracted a great deal of attention. In some quarters it was felt that the report was too late to permit farmers to change their plans with respect to crops of which the acreage gave indication of being too high or too low. This will be corrected another year. A second special inquiry was made as of August 1 to learn the intentions with respect to the planting of winter wheat and rye for the fall of 1923. This report was published August 15. It has been decided to incorporate intentions to plant reports into the regular system of crop reports, one to be issued in March covering spring-planted crops and one in August covering fall-sown crops.[13]

In his annual report for the year ending June 30, 1924, the Chief of the Bureau of Agricultural Economics spoke of the reports on intentions to plant:

> . . . These reports, while severely criticized in some quarters, are meeting with general favor on the part of a great many intelligent farmers and have now become an important part of the work of the division. There is no doubt that work of this character which furnishes the farmers information in advance of planting of the general trend of acreage will, when properly understood and used, go far toward bringing about a better adjustment of agricultural production. A provision included in the act requiring semi-monthly cotton reports prohibits the department from making intentions-to-plant reports on the cotton crop, and as a result of this provision no report was made this year on the intentions of farmers to plant cotton.[14]

The "intentions to plant" reports were opposed by the big cotton merchants and the cotton speculators. They had been gathering such information for their own use, but, when this material was gathered for the use of farmers as a basis of adjusting their production in line with probable effective demand, the service was objectionable to the speculators. If the farmer changed his plans, the speculator was at a loss until estimates of the readjustment could be made. It is

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[12] See H. R. Tolley, "The History and Objectives of Outlook Work," *Journal of Farm Economics*, 13:523–34 (October 1931).

[13] W. F. Callander, "Intentions-To-Plant Reports Begun," in U.S.D.A., Bureau of Agricultural Economics, *Report of the Chief* for the year ending June 30, 1923 (Washington, 1924), p. 13.

[14] H. C. Taylor, in U.S.D.A., Bureau of Agricultural Economics, *Report of the Chief* for the year ending June 30, 1924 (Washington, 1924), p. 11.

a well-known fact that information is worth most to a trader when he has the information and the other fellow does not have it. For farmers to proceed in the blind while merchants were well informed was useful to speculators but hard on farmers. When the farmers had the information in time to make needed readjustments, the merchant's information became worthless to him as a basis for superior profits due to better information. An agitation against the intentions reports was the natural result.

The Bureau of Agricultural Economics gave much attention to price analysis, to gathering facts regarding production and consumption throughout the world, to the description of types of farming in various regions of the United States, and to stimulating and aiding state experiment stations in carrying on research in various types-of-farming areas with a view to determining the kinds of production adjustments that were feasible in the light of the outlook.

PRICE OUTLOOK STUDIES

The efforts to assemble facts as a basis of the first Outlook Report demonstrated that much new research was needed on the conditions and forces which determine demand. Most of the work of the U. S. Department of Agriculture from 1862 on had assumed stable demand and had given especial attention to variations in supply. The situation in the early 1920's showed that the change in the demand side of the equation was, for the time at least, a dominant influence in determining prices. The outlook reports designed to help farmers to plan their production on the basis of what prices probably would be when the products reached the market obviously would have to give especial attention to the probable demand as well as to the probable supply.

Recognizing this need O. C. Stine, in charge of the Division of Statistical and Historical Research, built up a staff to study price trends. Some of the young men assigned to that work were L. H. Bean, E. M. Daggit, Mordecai Ezekiel, G. C. Haas, H. B. Killough, B. B. Smith, and E. J. Working. The first annual report of the Bureau of Agricultural Economics, for the year ending June 30, 1923, stated:

> To furnish a scientific and objective basis for price forecasting a new project was begun. A large part of the uncertainty attending present forecasts of prices arises from the imperfections of our knowledge of price relationships. Price changes and the series indicating changes in the supply and demand factors are as a rule not synchronous but occur with lags. To determine the degree of these relationships and their lags is the ultimate object of this analysis.
>
> The practical purpose of the price-analysis work is to give the farmer the benefit of a scientific analysis of his problem, so that he may be able to make the best estimate possible with the facts available. Considerable progress has been made in the analysis of hog and cotton prices, and the study of feeder-cattle prices has been started.[15]

[15] U.S.D.A., *Annual Report,* 1923 (Washington, 1924), pp. 188, 189.

Much of the price analysis work contributed directly to the outlook reports without reaching the public in formal bulletins, but in 1925 a bulletin was published on the analysis of oats prices.[16] In that study the supply and demand factors were studied with reference only to conditions in the United States and Canada for the reason that oats did not flow into the markets overseas. The author found that production alone was an inadequate basis for forecasting the price of oats. In addition he considered changes in the general price level, the year-to-year carry-over of oats, substitute crops, such as corn, and production of oats in Canada. In that study the methods of multiple correlation, then being further developed in the Bureau, were used.

An article by Holbrook Working on differentials in prices in the various potato markets was presented "as a contribution to the general subject of price differentials between markets."[17]

A bulletin on the price of hogs, issued in 1926, is an excellent illustration of the way in which price analysis was contributing to the outlook service. Both the supply and the demand factors at home and abroad were taken into consideration in an effort to explain current prices and to forecast probable future prices. The authors summarized their findings:

> The returns to the producers of hogs depend to a considerable extent upon how well they adjust the volume of their production to the demand for the product. They can make the best adjustment only if they can reach a sound conclusion as to the future developments in the hog market. Clear understanding of the forces which affect the market price is a prerequisite to reaching such conclusions.
>
> The dominant influences in the hog market, as shown by this study, are (1) the supply of hogs on the market and expected to arrive on the market within the next few months, (2) the quantity of hog products in storage, (3) the general price level, (4) general business conditions, and (5) the prices of alternative products. The general levels of demand, both here and abroad, are both important, but ordinarily change only slowly.
>
> The "hog-price cycle" was found to be due to the tendency of hog producers to overshoot the mark in increasing production when the relation of hog prices to corn prices was favorable and to reduce too much when it was unfavorable.
>
> Coupling the corn-hog ratio, indicating what changes were likely to occur in breeding, with other factors indicating changes in the weight of hogs and the demands of the consumers, very good forecasts of hog prices could have been made for the pre-war period. Since the war, however, conditions have been so unstable that the purely mathematical formula has not given such satisfactory results.
>
> At the same time the pig survey has provided the hog market with much better information as to the prospective supplies than were available before World War I (1914–1918), while the agricultural outlook from other sources may be tending to change farmers' reactions.[18]

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[16] H. B. Killough, "What Makes the Price of Oats," U.S.D.A., *Department Bulletin* 1351 (Washington, 1925). E. M. Daggit assisted in the preparation of this bulletin.

[17] H. Working, "Factors Influencing Price Differentials Between Potato Markets," *Journal of Farm Economics*, 7:377 (October 1925).

[18] G. C. Haas, M. J. B. Ezekiel, "Factors Affecting the Price of Hogs," U.S.D.A., *Department Bulletin* 1440 (Washington, 1926), p. 53.

A bulletin on the price of cotton[19] appeared early in 1928. The stated purpose of the bulletin was to analyze the factors influencing cotton prices and more specifically to answer such questions as:

> . . . What effect has the size of the crop upon prices? Upon the value of the crop? What is likely to be the price trend during a large or small crop season? What effect do low prices have upon the next year's acreage? What effect would a change in business conditions have upon the price of cotton?
>
> The purpose of this bulletin is to provide a basis for answering these and related questions, as determined by a study of factors influencing the yearly and monthly price variations over a period of 20 years.
>
> . . . the purpose of the study . . . is threefold: (1) To determine the factors which influence the price of cotton, (2) to reduce these factors to numerical measurement in so far as possible, and (3) to find and define the statistical relationship, if any, existing among these factors and the price. The study is not primarily an attempt to develop methods of forecasting, but rather an attempt to define quantitatively those relations of various factors to price, the qualitative nature of which is in many respects generally understood. For example, it is well known that a decrease in supply will bring about an increase in price. But an accurate statement of the percentage change in price accompanying any given percentage change in supply can not be made without defining the quantitative relationship between the two. This type of analysis is also a logical prerequisite to quantitative forecasting of price, for of what benefit in forecasting price is it to know what the supply will be unless the price effect of that supply is also known?

While that bulletin was prepared specifically as a basis for forecasting cotton prices that phase was apparently played down owing to a campaign against price forecasting. There was so much criticism of the Bureau's correct forecast of lower cotton prices in 1927 that Congress included in the next appropriation act[20] a prohibition on cotton price forecasting. This of course did not prohibit the making of quantitative studies of the different forces and conditions affecting prices and thus providing the basis for individual judgments as to probable price trends.

In all of the work in the field of price analysis improvements were being made in the methods of measuring the influence of the many factors determining prices. H. R. Tolley, Mordecai Ezekiel and Louis Bean took leading parts in that development; but many others participated. As a result the Bureau of Agricultural Economics became noted in the 1920's for its contributions to the development of methods of multiple correlation in statistical analysis. Multiple correlation studies were applied in the price analysis work undertaken as a part of the outlook service.

As described by Tolley and Ezekiel in "A Method of Handling Multiple Correlation Problems"[21] the method of multiple correlation (involving more than two related items) was intended to reveal the

[19] B. B. Smith, "Factors Affecting the Price of Cotton," U.S.D.A., *Technical Bulletin* 50 (Washington, 1928), pp. 1, 18–19.

[20] Act making appropriations for the U.S.D.A., for the fiscal year ending June 30, 1929. Public. 392, 70th Congress.

[21] H. R. Tolley and M. J. B. Ezekiel, "A Method of Handling Multiple Correlation Problems," *Journal of the American Statistical Association,* 18:993–1003 (December 1923).

relation of each of two or more items or "variables" to the one under investigation, and the relation of each to the one under investigation, on condition that the "influence" of all the other included items was kept constant, that is, "other things being equal." The one weakness of this technique was that it yielded only linear relationships. For example, in an analysis of year-to-year acreage changes, related to price, an increase in price from 100 to 150 would be shown to produce a certain increase in acreage, but for an increase in price from 150 to 200 the sraight-line relationship would show another increase of the same amount, and so on for each additional 50-cent increase. The true acreage response to price cannot, in many cases, be of that sort. No matter how high prices of a commodity may go, there is a limit to the area and resources that can be drawn upon immediately for expansion. Considerations of this sort led Ezekiel to develop a modification of the standard multiple correlation method for handling curvilinear correlation for any number of variables.[22] This called for first establishing the linear relationships as before; but then systematically modifying them by a series of approximations wherever the straight lines could be curved so as to produce relationships that fitted the actual data more closely.[23]

Pondering on the meaning of this procedure as a method of discovering the relation of one variable to another, while holding the effect of the others constant, L. H. Bean observed that it was possible to do away with both steps in the Tolley-Ezekiel method (the machine computations for determining linear relationships and then their manipulation into curves), and to discover the "true" or "net" relations by means of graphic analysis. He presented the method in early 1929,[24] again in December of that year, and in December, 1930.[25]

Applied to the same data, and without machine calculations, the Bean graphic method and the Ezekiel method gave identical results. In problems where the true relations were known, both methods reproduced them exactly.

The "mechanics" of the Bean method are performed on simple charts known as "scatter diagrams." A scale for one item or "variable" is laid out horizontally and the scale for the other, vertically. The corresponding values of the two are plotted as points in their appropriate locations within the diagram. Each point is labeled so that it may be identified in every step of the procedure.

This method has the obvious advantage of being labor-saving. Its real significance, however, is that it leads the analyst to greater knowl-

[22] M. J. B. Ezekiel, "A Method of Handling Curvilinear Correlation for Any Number of Variables," *Journal of the American Statistical Association*, 19:431–53 (December 1924).

[23] M. J. B. Ezekiel, *Methods of Correlation Analysis* (New York, 1930).

[24] L. H. Bean, *Applications of a Graphic Method of Multiple Curvilinear Correlation*, U. S. Department of Agriculture (mimeo.), (Washington, 1929).

[25] L. H. Bean, "A Simplified Method of Graphic Curvilinear Correlation," and "Application of a Simplified Method of Correlation to Problems in Acreage and Yield Variations," *Journal of the American Statistical Association*, 24:386–97 (December 1929) and 25:428–39 (December 1930).

edge of the problem under investigation. It automatically forces the analyst to deal with every observation included in the problem. This makes for much greater familiarity with the data than is the case when correlation is treated merely as a clerical job of putting data through a computing grinder to obtain certain "coefficients." This intimacy leads to questioning on the part of the analyst, especially with regard to apparent discrepancies, and the economic reasonableness of the indicated relationships, whether linear or curvilinear.

The graphic method of multiple correlation, because of its labor-saving advantage, has had the effect of stimulating economic analysis in many places, not only where clerical work was not available, but also in many research agencies, both public and private. The crop estimating people have found it useful. Through its use, the analyst, instead of consciously or unconsciously accepting the results of a machine-computed coefficient and equation, is fully aware of what the results mean, the extent to which they depend on the data and on the judgment of the analyst.

Examples of its earliest application are given in Bean's original papers. They include analyses of the relation of supply to the price of cotton, potatoes, and apples; the relation of price and industrial activity to the consumption of cotton; the relation of weather factors to yields per acre. In a paper on the "Farmers' Response to Price"[26] the graphic method is used to determine the relation of the hog-corn ratio to the year-to-year changes in the number of hogs on farms and the relation of price to the year-to-year changes in acreages of a number of commodities (cotton, wheat, potatoes, flax, rye, cabbage, strawberries). That paper revealed for the first time the basic character of the supply curve for farm products which instructors in economics usually drew on the blackboard in an arbitrary fashion. The subject was developed further by Bean in his work on the characteristics of agricultural supply and demand curves. The graphic method is peculiarly suited for problems of that sort, where curvilinear relationships are logically to be expected.

The price analysts of the Bureau of Agricultural Economics were among the first to adopt total measures of national money income as measures of effective demand. Fluctuations in industrial production served as a measure of the demand for farm products for industrial uses, such as cotton and wool, but for food price analyses, money income measures were needed. For a brief period, the Bureau of Labor Statistics' series of factory payrolls served this purpose. Then other payroll series were added to form an index of income of industrial workers (in factories, mines, and railroads).

The early stages of the depression of the 1930's indicated that

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[26] L. H. Bean, "The Farmers' Response to Price," *Journal of Farm Economics*, 11:368–85 (July 1929).

this too was too limited a measure of demand, and resort was had to the then emerging estimates of the national income by W. I. King.[27]

Thus the effort to tell the farmer six or nine months in advance the kind of a market he is seeding or breeding for proved exceedingly stimulating in developing new methods of securing and evaluating facts which contribute toward that end.

LOCAL PRODUCTION ADJUSTMENT STUDIES

From 1925, when the Purnell funds became available, until 1932, great numbers of local market studies in specific areas and studies of individual commodities were made by experiment station economists. In general they were production studies made with eyes on the market. One line of research which was intended to throw light upon opportunities for agricultural readjustments may be classified as local market studies. The studies were designed to find opportunities for farmers to produce more for the local market and less for distant markets at a time when surpluses of agricultural staples were depressing prices. The first of a series of such studies, stimulated by the Bureau of Agricultural Economics, was published in 1924 by the Pennsylvania Agricultural Experiment Station.[28] It was thought that farmers of Blair County might improve their condition by producing more cash crops for consumption in Altoona. The study showed that the farmers of the area were producing an adequate milk supply for Altoona, and were meeting the demand for veal. Local apples dominated the market until January, but there was an insufficient supply of heavy poultry, and only a fraction of the demand for eggs was being met. Blair County was producing only eight per cent of Altoona's potato consumption, five per cent of the beef, and four per cent of the pork. A high percentage of the common vegetables used in Altoona was produced in Blair County, but only rhubarb and sweet corn were in full supply. Corn and oats were in the deficit class for the county. The principal recommendations[29] were that more attention be given to poultry and eggs, potatoes, barley, alfalfa, fruits and vegetables, especially cabbage, celery, and asparagus; that the quality of the apple crop be improved by spraying and cultural methods; that apples for the market be standardized by proper grading. An increase in storage facilities in Altoona was also recommended in order that the use of local products might be extended over a greater part of the year.

The second Pennsylvania local or county study was undertaken with a somewhat different outlook. The outside as well as the local

[27] See W. I. King and L. Epstein, *National Income and Its Purchasing Power,* Number 15 of the publications of the National Bureau of Economic Research, Incorporated (New York, 1930).

[28] R. B. Dunlap, B. H. Critchfield, and M. V. Carroll, "Adjusting Production To Meet Home Market Demands in Blair County, Pennsylvania," Pennsylvania Agr. Exp. Sta. *Bulletin* 184 (State College, 1924).

[29] Dunlap, *et al.,* "Blair County," pp. 48–51.

markets were kept in mind. The authors said: "The aim of this report is to present and interpret facts and conditions regarding agricultural production and marketing in the county [Lebanon], and not to give specific directions for individual farms."[30]

Dairying was the principal source of income in Lebanon County. The area was within the Philadelphia milk supply zone and yet the farmers did not qualify for that market. As a result they were getting only manufacturing prices for their milk. The Hershey Company was a large consumer of the milk. The authors said of the situation at that time:

> . . . The Philadelphia price, less freight, prevails in many adjacent counties but does not prevail in Lebanon County for the following reasons:
>
> 1. There is practically no competition.
> 2. No competition can be expected until the present quality of milk is improved.
> 3. The excessive spring production does not attract fluid milk buyers; they are usually short of milk in the fall months when Lebanon County production is low.
>
> To bring about competition for their milk, Lebanon County farmers must meet the requirements of the Philadelphia fluid milk market and must produce more milk in the fall and winter months when it will be attractive to outside dealers.[31]

From the point of view of the Bureau of Agricultural Economics, the area studies in Pennsylvania were an experiment.

From 1924 to 1930 the West Virginia Agricultural Experiment Station made four studies of local market requirements with a view to adjusting agricultural production to home market demands. Those studies were initiated with the belief that West Virginia should feed herself. The adopted slogan was: "Help West Virginia Feed Herself." In a foreword to the first of the series of bulletins, Nat T. Frame said, "With the development of industrial centers in nearly all parts of West Virginia the fundamental agricultural problem of our state has been to adjust our farm management so as to carry out the above slogan adopted some years ago by the organized farming interests of the state."[32] The introduction to the bulletin states:

> . . . This study has taken up several things that the producer should know about his market, namely:
>
> 1. The kinds, quantity, and quality of products demanded by the market.
> 2. The probable constant, increased, or decreased demand for these products on his market.
> 3. Comparative prices on his market with competing markets.
> 4. Who are his competitors in production; their advantages and disadvantages over the local producer.

[30] A. C. Berger, P. R. Taylor, B. H. Critchfield, and R. S. Kifer, "Agricultural Production and Marketing in Lebanon County, Pennsylvania," Pennsylvania Agr. Exp. Sta. *Bulletin* 198 (State College, 1925), p. 5.

[31] Berger, *et al.*, Lebanon County, pp. 14–15.

[32] W. W. Armentrout, H. T. Crosby, and H. I. Richards, "Adjusting Agricultural Production and Distribution in South Central West Virginia To Meet Home Market Demands," West Virginia Agr. Exp. Sta. *Bulletin* 188 (Morgantown, 1924), p. 3.

5. What are the transportation facilities available for each of his competitors.
6. The marketing machinery which has been built up in his market.[33]

The second bulletin of the series contains a statement of purpose:

> Agriculture is continually facing periods of readjustment as population increases and industry grows. During the past ten years a need for readjustment in agriculture in some sections of the state has been felt keenly by farmers and agricultural leaders in West Virginia. The need for such adjustment has been intensified in Harrison and neighboring counties because of the general agricultural situation following the World War [I], (1914-1918) because of the increase of population of cities in this part of West Virginia, because of the great increase in mileage of improved roads in this section, and because of the farmers' increasing need for money.
>
> Economic adjustments will eventually work themselves out but, with an understanding of the forces at work as a basis of guiding adjustments, much loss of time, effort, and often wealth may be avoided.[34]

While those reports described the requirements for food in the local market which were being met by outside producers, they gave no detailed method to be used by farmers in figuring out the relative profitableness of the various possible combinations of enterprises which might include more of the products required in the local markets.

Between 1924 and 1932 the Indiana Agricultural Experiment Station issued a number of bulletins that pointed out ways in which farmers could get better incomes by adjusting their production or by improving the quality of their products. Five of those bulletins focused attention on local markets and the question of how production might, to advantage, be adjusted to meet the demands of that market. The first of that class of studies dealt with Wayne County farming and the Richmond market.[35] The study was similar to the Altoona market, Blair County, Pennsylvania, study made in 1924,[36] in cooperation with the Bureau of Agricultural Economics. While the Wayne County, Indiana, study gave a picture of the Richmond market, it discovered no significant and certain thing the farmers could surely do with profit in the way of producing more for that market.

The other four studies of adjustment to local market demands in northwestern Indiana were more helpful than the Wayne County study. The growth of the industrial population in that area was rapidly increasing the demand for food. The first of these studies

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[33] Armentrout, *et al.*, "South Central West Virginia," p. 6.

[34] W. W. Armentrout, "Adjusting Agricultural Production and Distribution in the Clarksburg Area To Meet Home Market Demands," West Virginia Agr. Exp. Sta. *Bulletin* 212 (Morgantown, 1926), p. 3. See also, W. W. Armentrout, "Adjusting Agricultural Production and Distribution in the Beckley Area To Meet Home Market Demands," West Virginia Agr. Exp. Sta. *Bulletin* 226 (Morgantown, 1930), and W. W. Armentrout, "Adjusting Agricultural Production and Distribution in the Wheeling Area To Meet Home Market Demands," West Virginia Agr. Exp. Sta. *Bulletin* 228 (Morgantown, 1930).

[35] M. H. Overton and P. K. Edwards, "The Production and Marketing of Farm Products in Wayne County, Indiana," Indiana Agr. Exp. Sta. *Bulletin* 295 (Lafayette, 1925).

[36] R. B. Dunlap, B. H. Critchfield, and M. V. Carroll, "Adjusting Production To Meet Home Market Demands in Blair County, Pennsylvania," Pennsylvania Agr. Exp. Sta. *Bulletin* 184 (State College, 1924).

went specifically into the question of the profitableness of the early potato,[37] for which there was a large demand in northern Indiana.

The place of early potatoes on northern Indiana farms is as a supplementary crop replacing a part of the corn on sandy land on farms where little or no extra labor will have to be hired to plant, cultivate and harvest the early potato crop. . . .

One-half million dollars can be added annually to the income of certain northern Indiana farmers who will properly produce and market an additional 10,000 acres of early potatoes. . . .

The extra cash cost of growing five acres of early potatoes instead of five acres of corn will usually amount to from $120.00 to $130.00 on farms where no extra hired labor is required for work on potatoes. . . .

Five acres of early potatoes will likely return $275.00 more than five acres of corn as pay for the extra 22½ days of man labor, 6½ days of horse labor and 12½ tons of manure required for potatoes over an equal acreage of corn. . . .

The demand for early potatoes in northern Indiana markets is from two to three times as great as the present supply furnished by local production.[38]

The second study of northwestern Indiana was of a more general character by the same author who pointed out the expansion of the local market in these terms:

Growth of urban population in Lake, Laporte, St. Joseph, and Elkhart Counties translated in terms of increased demand for farm products means that 1,100 cows would be required to produce the milk and cream; 2,200 cows to produce the butter; 6,200 hogs weighing 200 pounds at market time for the pork; 53,000 hens to produce the eggs; 430 acres to grow the potatoes; and 2,100 acres for the wheat from which to make the flour to feed the annual increase in population each year in these four counties from 1900 to 1920.[39]

The author noted the changes which had been taking place:

The sale of whole milk in 12 northwestern Indiana counties is increasing more than one-third more rapidly than in the remainder of the state. . . .

Beef production has declined 17.5 per cent faster in northern Indiana than in the remainder of the state. . . .

Poultry production has increased eight per cent more rapidly in 12 northwestern Indiana counties than in the remainder of Indiana.[40]

Between 1900 and 1925 sheep production decreased 59.7 per cent.[41] "In a rapidly growing section like northern Indiana, conditions are always in a state of flux and constant attention and study are necessary to recognize and meet the new problems that develop continually."[42]

Four years later the northwestern Indiana situation was again studied. The findings were summarized:

In Northwestern Indiana farming systems and methods are changing more

[37] M. H. Overton, "Increasing Farm Profits With More Early Potatoes in Northern Indiana," Indiana Agr. Exp. Sta. *Bulletin* 305 (Lafayette, 1926).
[38] Overton, "Increasing Farm Profits," inside cover, pp. 3–5, 8.
[39] M. H. Overton, "What Is Happening to Agriculture in Northwestern Indiana?" Indiana Agr. Exp. Sta. *Bulletin* 321 (Lafayette, 1928), pp. 3–4.
[40] Overton, "Northwestern Indiana," p. 2.
[41] Overton, "Northwestern Indiana," p. 12.
[42] Overton, "Northwestern Indiana," p. 47.

than in any other large territory in the state on account of the nearness of the region to the great and rapidly developing industrial cities around southern Lake Michigan.[43]

The following changes which are taking place in this region primarily on account of its location have an important bearing on market procedure: (a) A greater increase in the use of trucks, particularly in the northern part of the region, on account of the nearness to the large industrial cities. This means a need for fewer local marketing agencies, changes in volume of business for those which remain, and changes in comparative prices of the same product in different parts of the region; (b) Smaller grain sales through local agencies, particularly outside of the cash grain area of southern Newton and Jasper Counties; (c) Smaller total production of hay, smaller demand for timothy hay in industrial cities, and increased market outlet for legume hay in the region; (d) Smaller marketing of hogs and beef cattle from the territory nearest to the industrial cities accompanying the increase in dairy and poultry production and the increase in non-farming rural population; (e) Increased demand for sacked feed, particularly poultry feed in the grain-deficit areas (except in periods of depression); (f) Decrease in killing of livestock by local butchers; (g) Greater variation between depression and boom periods in the demand for farm products and in costs of marketing than farther out in the state; (h) Tendency for permanent changes in market procedure to take place more rapidly than in regions not so much influenced by industrial growth.

Operators of local marketing agencies and of transportation agencies, as well as farmers, need to consider these changes in market conditions as a basis for adjustments in marketing investments and operations in the future.[44]

In the same year the Indiana Agricultural Experiment Station issued another bulletin on northwestern Indiana which described the changes in farming in two counties, Lake and Porter, which had taken place because of the rapid expansion of the demand in the local market:

. . . the nearness of the northwestern Indiana counties to the heavily populated industrial region has affected the farming situation in five ways. First, it has resulted in comparatively advantageous markets for many farm products, particularly milk, eggs, poultry, fruits, vegetables, and other perishable products which do not go through much of a manufacturing process before being consumed. Second, it has brought increased labor problems and costs, especially in times of industrial prosperity. Third, it has increased farm land prices beyond the value of the land for agricultural purposes, thereby raising the cost of production by increasing interest and tax charges. Fourth, it has impeded farm improvements such as fencing, building, draining, and liming in areas where land owners believed that the land would soon be used for other than agricultural purposes. Fifth, it has detracted from community life by bringing into the rural sections people who are of different nationalities or who are not farmers but are living in the country while they work in cities or at the numerous resorts, recreational places, or service stations that have grown up near the main lines of travel.

Thus, a different combination of conditions has arisen to influence the choice of crops and livestock enterprises, of farm power and equipment, and

[43] L. Robertson and E. R. Bonham, "Variation in Local Marketing Procedure for Grain, Hay, Livestock and Feed in Northwestern Indiana," Indiana Agr. Exp. Sta. *Bulletin* 364 (Lafayette, 1932), p. 3.

[44] Robertson and Bonham, "Variation in Local Marketing Procedure," p. 2.

of production and marketing practices in this area near the large industrial cities than in areas farther away.[45]

The idea of meeting the demands of the home market by local farmers led to a study in Connecticut by I. G. Davis and Frederick V. Waugh to measure the extent of the demand in the markets of that state for vegetable crops.[46] Receipts at six of the most important markets were studied to determine the amounts of certain vegetables arriving from outside Connecticut. The authors were endeavoring to answer the question:

> . . . how many acres of any crop can be added to the present amount in the state without creating a supply in excess of local market needs. . . .
>
> . . . Connecticut growers are interested primarily in the amount of vegetables which are brought into the state and sold in direct competition with the locally grown product during its marketing season.[47]

The authors found that:

> . . . The one vegetable crop which offers an opportunity for a large increase in acreage is potatoes. With proper storage facilities local growers could plant 6,000 acres more than usual in potatoes without creating a supply in excess of local market needs.
>
> There seems to be an opportunity for a slightly larger acreage than at present in cantaloupes, onions, beans and cabbage. Local markets are now importing enough of these commodities during the local marketing season to warrant a small expansion of the present acreage. . . .
>
> At the present time local vegetable growers do not supply the markets during as long a season as would be possible if better storage facilities were available. At present most of the local potatoes are sold during the fall. . . .
>
> The study points out the fact that from year to year larger and larger supplies of vegetables, excepting sweet corn, have been coming from competing regions into Connecticut during the season when locally grown vegetables are available. When considered with the figures on acreage changes in the state from 1919 to 1924, receipts indicate that market demand for cabbage, onions, and tomatoes has stayed about constant; but that products from competing regions are making gains and local production is decreasing. Demand for celery, spinach, lettuce, kale and other green leaf specialties is increasing rapidly and the local supply is not fully meeting competition in these lines. In all lines of vegetable production it is plain that Connecticut producers are facing increased competition from outside regions. A new marketing problem has arisen. The problem is no longer to furnish ordinary vegetables to a vegetable hungry public during a limited season. Rather, the problem is to compete with highly organized outside producers and sellers who grade and pack their product in many cases with the greatest regard to attracting and holding the consumers' fancy, who sell through the organized channels of trade, who furnish the market almost continuously with a supply of products of dependable quality, and who never allow the public to become really vegetable hungry.[48]

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[45] L. Robertson, "Changes in Farming in Lake and Porter Counties, Indiana, as a Result of Nearness to Industrial Cities," Indiana Agr. Exp. Sta. *Bulletin* 365 (Lafayette, 1932), pp. 3–5.

[46] I. G. Davis and F. V. Waugh, "Connecticut Market Demand for Vegetables," Connecticut Agr. Exp. Sta. *Bulletin* 138 (Storrs, 1926).

[47] Davis and Waugh, "Market Demand," p. 27.

[48] Davis and Waugh, "Market Demand," pp. 28–29.

But the authors pointed out:

The existence of a market demand does not, however, necessarily make it advisable for Connecticut growers to attempt to compete with other sections in supplying the market. Whether or not this attempt should be made depends on the relative advantages of Connecticut growers as compared with those of growers in competing regions. For example, onions can be raised in Connecticut. It would probably be possible for Connecticut farmers to supply the local markets with onions. Whether or not this would be advisable depends on the relative advantages of this state compared with the Connecticut Valley in Massachusetts. Most of the land in this state adapted to onion growing is close to large cities. Land values are high. Urban industries compete for the labor supply. The average cost of producing onions is probably greater for Connecticut than for Massachusetts, and most of the Connecticut land and labor which might be employed in onion production finds a more profitable or satisfactory result in other ways.[49]

But the study did not present in that bulletin the facts, or indicate the procedures the farmers might use in obtaining the facts, which would show the relative profitableness of the enterprises available to Connecticut farmers. Without such facts as a basis of individual farm planning, the farmer could make little use of the facts regarding the home market demand.

The first of the South Carolina studies looking toward agricultural readjustment to meet local market requirements proceeded as follows:

Two hundred and fifty housekeepers in the city of Greenville and in the surrounding mill towns were personally interviewed by enumerators in order to determine their preferences in buying farm produce that is partly or wholly supplied from the farms in the surrounding country. . . .

The results presented in this bulletin show the comparative advantages of . . . different enterprises and bring out some of the points to take into consideration in marketing farm products and supplying local demand. . . . Most of the farmers in the Greenville area find it most profitable to engage in cotton farming, raise their foods and feeds so far as possible and in some cases, especially when located near town, engage in one or more cash enterprises in addition to cotton. Within a few miles of Greenville, some farmers find that it pays to engage in dairying alone or in trucking alone.

. . . An enterprise must, first of all, be profitable. It is well if possible for it to fit in as regards distribution of labor on enterprises on the farm. Cotton and corn conflict for labor because the two crops require cultivation at the same season. According to 1924 results from Anderson County, cotton returned, net, nineteen cents for each hour of man labor spent on it; and corn, six cents, net. On this account, as well as for other reasons, corn is largely eliminated as a cash enterprise in the area.[50]

Similar studies were made in the Columbia and the Charleston areas.[51] By introducing the cost accounting information on the rela-

[49] Davis and Waugh, "Market Demand," p. 28.

[50] F. H. Robinson and W. C. Jensen, "An Agricultural Production, Consumption, and Marketing Study in the Greenville, South Carolina, Trade Area," South Carolina Agr. Exp. Sta. *Bulletin* 240 (Clemson College, 1927), pp. 5, 67–69.

[51] T. D. Johnson, F. H. Robinson, B. A. Russell, and W. C. Jensen, "An Economic Study of the Columbia Farm Trade Area," South Carolina Agr. Exp. Sta. *Bulletin* 243 (Clemson College, 1927); A. M. Carkuff, "An Agricultural Survey of the Charleston Area," South Carolina Agr. Exp. Sta. *Bulletin* 253 (Clemson College, 1928).

tive profitableness of the various enterprises, the South Carolina studies gave the farmers a method to use in making a choice between competing enterprises.

The Illinois Agricultural Experiment Station conducted a rural-urban trade area study, the results of which were published in 1929. The authors recommended:[52]

1. That no radical change in the general type of farming in the area be undertaken, but that the production of fruit, vegetables, milk, poultry, and eggs be so adjusted as more nearly to meet local demands.
2. That consumer education in regard to desirable food habits and the selection and purchase of foods on the basis of quality be undertaken.
3. That producers be instructed in the grading and packing of food commodities, so that the local farm products will come to market in condition to attract the discriminating buyer and successfully compete with shipped-in products.
4. That the cooperation of dealers be secured in order to expedite efforts to inform producers and consumers with reference to the advantages of graded produce.

Michigan, too, made one of the local market studies with a view to seeing if the farmers might, to advantage, produce a higher proportion of the Lansing food requirements. The report of 144 pages gave a comprehensive picture of the agriculture of the area,[53] but as a basis of adjusting production to local market demands it had little to contribute.

Local market studies were made in Virginia on the assumption that the recent advance in railroad freight rates, the improvement of motor roads, and the increased use of motor trucks, would give farmers in the vicinity of cities an additional advantage in competing in the local market.[54] The reports gave clear pictures of the agriculture of the areas studied and thus gave a background in terms of which the farmers might think through the question of adjustment in the light of the outlook in outside markets as well as in local markets. The authors named the products largely shipped in from other areas and suggested points to be considered in expanding their production. But in the main the authors refrained from telling the farmers specifically what to do.

The area study[55] looking toward agricultural readjustments in Louisiana was based upon an economic survey. Major attention was

[52] H. W. Mumford, C. L. Stewart, H. C. M. Case, and P. E. Johnston, "Developmental Study of a Rural-Urban Trade Area," Illinois Agr. Exp. Sta. *Bulletin* 326 (Urbana, 1929), p. 189.

[53] C. A. Scholl and W. O. Hedrick, "The Lansing Food Survey," Michigan Agr. Exp. Sta. *Technical Bulletin* 107 (East Lansing, 1930).

[54] J. J. Vernon and H. I. Richards, "The Agricultural Situation in Roanoke and Its Trade Territory," Virginia Agr. Exp. Sta. *Bulletin* 240 (Blacksburg, 1925); J. J. Vernon, T. D. Johnson, and W. O'Byrne, "The Adjustment of Agricultural Production To Meet Home Market Demands in the Clifton Forge-Covington Trade Area," Virginia Agr. Exp. Sta. *Bulletin* 266 (Blacksburg, 1929).

[55] B. H. Critchfield, T. D. Johnson, S. E. Johnson, R. L. Thompson, W. F. McDonald, and R. D. Forbes, "Louisiana Agriculture Progress and Opportunities," Louisiana State University and Agricultural and Mechanical College, Division of Agricultural Extension, *Extension Circular* 89, Part 1, "Agricultural Conditions, General Crops, and Livestock"; Part 2, "Climate and Reforestation"; Part 3, "Fruits and Vegetables"; Part 4, "Agricultural Situations in the Rice Section, St. Landry Parish and Sugar Cane Section"; Part 5, "Agricultural Situation in the Shreveport Trade Area of Louisiana" ([Baton Rouge], 1926).

given to the question of what changes, if any, could be made in the type of farming in the interest of greater profits for the farmer and better food supplies for the people of the cities. Attention was given to the possibility of expanding the dairy industry and of introducing additional crops or expanding some of the minor crops, such as oats and sweet potatoes. Those in charge of the survey were quite conscious of the importance of selecting enterprises with a view to a full labor program throughout the year. A study of seasonal labor requirements of each crop was looked upon as the starting point in the choice of enterprises. The next step was to secure cost and price data as a basis of working out a plan that gave promise of maximum profits.

STATE AND REGIONAL ADJUSTMENT STUDIES

The economic studies in various states of the production and marketing of specific commodities made a more comprehensive approach to the problems of agricultural readjustments than did the local market studies. The Idaho Agricultural Experiment Station took seriously the question of agricultural adjustment in the light of prospective market prices and competition in other areas. From 1927 to 1932 a series of bulletins on adjusting production to marketing prospects was published by that station. The Bureau of Agricultural Economics of the U. S. Department of Agriculture co-operated in preparing some of the bulletins. In 1927 four economic studies on production and marketing, with an eye on the prospective price, were issued. The first was a general statement of the agricultural situation in Idaho and related to practically all lines of production, while the other bulletins of that series related to dairying, potatoes, and poultry.[56] Later studies related to apples, potatoes, cherries, and hogs.[57] Those specialized bulletins were followed by two bulletins on budgeting, illustrating methods of deciding what to produce in the light of the price outlook.[58] The point of view of the whole undertaking is expressed in the following excerpt from the final of the series of bulletins.

Farmers learn what to produce fairly well by trial and error during periods when prices remain reasonably stable. However, the trial and error process requires time and usually is expensive. When the relative profitableness of farm enterprises is shifted abruptly by sudden and unequal changing of prices, such as occurred in 1920 and 1921 and again in 1930 and 1931, the problem of deciding what to produce and making production plans becomes very difficult. Under such trying circumstances, farmers are much confused

[56] Idaho Agr. Exp. Sta. *Bulletins* 151, 152, 153, and 154 were issued in Moscow, June-July 1927, under the titles: "The Farming Business in Idaho," "The Dairy Situation in Idaho," "The Potato Situation in Idaho," and "The Poultry Situation in Idaho."

[57] Idaho Agr. Exp. Sta. *Bulletins* 162, 166, 171, 190, and 191 (Moscow): C. F. Wells, "Statistics on the Prices and Destinations of Idaho Apples," (1928); R. B. Heflebower, "Factors Relating to the Price of Idaho Potatoes," (1929); E. C. Blodgett, "The Cherry Industry in the Lewiston Orchards With Cultural Recommendations," (1930); J. E. Nordby, "Type in Market Swine and Its Influence on Quality of Pork," (1932); T. L. Gaston, "Hog Prices and the Hog Enterprise on Idaho Farms," (1932).

[58] Idaho Agr. Exp. Sta. *Bulletins* 173 and 195 (Moscow): G. Severance, B. Hunter, and P. Eke, "Farming Systems for Eastern Washington and Northern Idaho," (1930); B. Hunter and P. Eke, "A Method of Determining What To Produce," (1932).

and frequently shifts are made from one enterprise to another or radical changes made in the magnitude of enterprises without sound reasons for doing so. Such changes, of course, are likely to result in serious loss. This study was undertaken to develop a better basis for planning ahead, both for local areas and the individual farms.

Budgeting is the method chosen for making the comparisons in planning ahead. As here used it includes the plan for the proposed system of farming to be followed. It shows the use to be made of land, the crops to be grown, the livestock to be kept, and the estimated production, receipts, expenses, and net returns. A budget, or a series of budgets, when carefully prepared is a valuable aid in selecting enterprises, deciding how much of each to produce, and in estimating probable future returns. The farmer who carefully prepares budgets year after year and keeps records of yields obtained, prices received and paid, expenses incurred and mistakes made, becomes more efficient year after year in deciding what changes, if any, should be made in his production program and in comparing the probable future returns from his present farming system with estimated returns from modifications which may seem desirable.

Farm conditions may be improved in two ways by the use of the budgeting method: (1) Basing their calculations on price outlook information, average crop yields, and average cost factors, research workers may study out systems of farming for a given area which appear likely to give the farmers the best results during the years just ahead. Farmers may then follow these systems to the extent that is practicable, without setting up detailed budgets for their individual farms. (2) A better plan of procedure, however, is for each farmer, working on the suggestions he receives from the general "typical" budgets prepared for his locality by the research and extension agencies, to carefully prepare plans for his own farm and thereby compare the estimated future returns from a few systems which seem most promising of good returns. From these he can then select what appeals to his judgment as the best for his farm.

Farming is a forward looking business. . . . To decide wisely what prices to use in estimating future receipts requires a thorough knowledge of production trends, consumer demand, price trends, and market outlook; that is, a knowledge of the forces which make prices. The following will be found very helpful in acquiring that knowledge:

1. Idaho Agricultural Situations, issued monthly by the University of Idaho, College of Agriculture.
2. The Agricultural Situation, issued monthly by the United States Department of Agriculture.
3. The Agricultural Outlook, issued annually by the United States Department of Agriculture.
4. Yearbooks, statistical bulletins, and special commodity price studies issued by the United States Department of Agriculture.
5. Market News Service reports issued by the United States Department of Agriculture.

The expense of operating farms, even of the same size, under the management of different men varies considerably. Because of this each case should be handled on its own merits. . . .[59]

Many other states made economic studies of their farm enterprises as a background for interpreting outlook data in terms of future

[59] Hunter and Eke, "A Method of Determining What To Produce," pp. 3, 33, 35.

plans, but few of them hitched the enterprise studies so closely with a budgeting method of working out concrete plans as did Idaho.

The California experience in agricultural readjustment is particularly illuminating. The depression of 1921 greatly reduced prices of field crops, while prices of fruits remained on a profitable basis. That situation led to a speeding up of the shift from field to orchard products that resulted in a depression in prices of fruit when new plantings came into bearing. The situation was described:

> . . . Between 1920 and 1925 the percentage decrease [in crop acreages] ranged from 13 per cent for hay to over 40 per cent for corn, wheat, grain sorghums, and beans. The field crops of California declined about one and a half million acres, or about 26 per cent. . . .
>
> Between 1920 and 1925 . . . . The total fruit acreage of the state increased 43 per cent, or an increase of 573,000 acres. . . .
>
> By 1927–1928 the increased plantings of California fruits were manifesting their production through the increased volume on the markets. The California pack of canned fruit increased 48 per cent over that in the years of 1919–1920. The dried fruits had similarly increased by 58 per cent. The inter-state shipments of fresh fruits had increased by the enormous gain of 182 per cent. . . .
>
> Consequently, prices fell for most California fruits. Between 1921–1922 and 1926–1927 the price of peaches declined 30 per cent, of plums 33 per cent, of prunes 37 per cent, and of figs 44 per cent. Farmers who had planted these crops on high-priced lands and at high wages found themselves unable to market the crops at the expected prices. Many could not make a profit upon the investment already involved. Some could not make cost of production. Furthermore, in a number of these crops the peak of production had not yet been reached and would not be reached for years to come. A steadily increasing volume was to be expected.[60]

The time when research and outlook service was most sadly needed was between 1920 and 1925 when the planting of fruit trees was proceeding at high speed. Several years were required before the new plantings came into bearing, but that meant a deeper and longer depression when it came. The fact that, once planted, the trees live many years made readjustment in production especially difficult. The situation was bad, and farmers were readier to blame others than to blame themselves.

Economists of the California Agricultural Experiment Station became convinced that farmers were disposed to blame marketing organizations for trouble which was due to maladjustment of production. They noted that the outlook reports, issued by the U. S. Department of Agriculture, were based upon the theory that the most important thing the farmer could do to solve his marketing problem was to adjust production to the market demand. California economists recognized the value of "intentions to plant," "intentions to breed," and the price trends which were being used in preparing "outlook reports" by the U. S. Department of Agriculture.

[60] B. H. Crocheron and W. J. Norton, "Fruit Markets in Eastern Asia," California Agr. Exp. Sta. *Bulletin* 943 (Berkeley, 1930), pp. 7–9, 11–12.

These economists decided that in order to make agricultural adjustments in the light of outlook reports, it was necessary to know a great deal more than was then known regarding the situation in each line of production. Where, they asked, are the markets? Who are the competitors in those markets? What is the trend in production of a given product? Which qualities of the product are in demand?

In order to obtain the desired data many economic studies relating to production and marketing were made during the years 1926 to 1932. Each of them related to some specific crop or livestock product important in California. H. E. Erdman developed the idea, and the first studies were made under his direction. Once those basic outlook studies were under way, the Extension Service shared actively in the work as an educational service to farmers. The geographical, the historical, the statistical, and the analytical methods were all used in assembling and organizing facts relating to the production and marketing of each commodity. The supply and the demand for a given commodity were thus presented in a dynamic setting which showed trends and suggested lines of future action or pools of inaction.

The first of the commodity series of economic studies of California's agriculture dealt with the poultry industry and considered trends in production, in prices, in the purchasing power of eggs, and in the ratio between the cost of feed and the price of eggs.[61] It was a statistical, historical, and comparative study which gave the setting in which the California farmer produced and marketed eggs. Emphasis was placed upon the fact that California white eggs commanded a premium on the New York City market, upon the fact that transportation costs were high, and upon the fact that the poultry industry was highly specialized, using large quantities of concentrated feedstuffs, much of which was shipped into the state. Hence the high quality that would command premiums was essential in order to cover costs and yield a profit.

The next study dealt with the economics of the cantaloupe industry of southeastern California. The object of the study was stated:

> The object of this paper is to present and to analyze the available data that have an economic bearing on the cantaloupe industry in the United States in general, with special reference to the cantaloupe industry in the Imperial Valley. Those factors which affect prices of Imperial Valley cantaloupes and the effect of prices on subsequent acreage are analyzed in considerable detail with the hope of bringing about a more stable industry.[62]

Tropical climate and irrigation are primary factors in providing the basis for entering the market early in the season with a product of high quality. The bulletin was one of six published in 1927 which had the objective of providing the background for thinking and for

[61] E. C. Voorhies, "The California Poultry Industry: A Statistical Study," California Agr. Exp. Sta. *Bulletin* 413 (Berkeley, 1926).

[62] E. Rauchenstein, "Economic Aspects of the Cantaloupe Industry," California Agr. Exp. Sta. *Bulletin* 419 (Berkeley, 1927), p. 5.

planning production in the light of supply and demand prospects as set forth in outlook reports.

The second of the 1927 studies dealt with apricots. The apricot outlook was stated:

> Apricot acreage is increasing. Production will be substantially higher when the present acreage comes into full bearing. There is no immediate prospect that this probable increase can be absorbed at the relatively high price level that apricots now occupy. Consequently growers should expect decreased returns in the future unless they are able to improve the quality of their apricots or produce them at lower costs. Those who can not make these improvements and who have not made satisfactory profits in the past should give careful attention to alternative enterprises.[63]

A study of the grape industry emphasized the economic aspects:

> The primary object of this study has been to . . . answer . . . the question, "what is the economic situation of, and the outlook for, California's fresh-grape industry?" . . .
>
> The spectacular expansion in California's shipments, acreage, and production of grapes in the last ten years has resulted in a serious decline in the farm price . . . of fresh grapes and raisins since 1921 and 1922. . . .
>
> Among all the fruit shipments originating in the United States in the last few years, grapes have ranked second only to apples, averaging about 16 per cent of the country's total carlot movement of all fruits. During this same period California's grape shipments greatly exceeded those of any other California fruit or vegetable, averaging 27 per cent of the carloadings of all perishables in the state. . . .
>
> . . . Before 1915 practically none of the grapes shipped from the state were designed for wine making. By 1921, however, almost 20,000 carloads of juice stock were shipped, and in the last two years an average of nearly 50,000 carloads, or approximately 70 per cent of California's grape shipments have been juice stock.
>
> Of California's grape shipments in 1926, all of the wine-grape varieties, 16 per cent of the raisin-grape varieties, and about 13 per cent of the table-grape varieties were classified as juice stock. . . .
>
> Central and northern California each produces and ships more grapes than are grown in the whole country outside of California. Even the production of the southern district, although less than 5 per cent of the state's total output of grapes, is somewhat greater than that of New York, the most important grape-producing state except California. . . .
>
> The high prices and the high purchasing power of fresh grapes from 1919 through 1922, and of raisins from 1919 through 1921, were responsible for stimulating a tremendous and unwise increase in the grape acreage of the state, the effects of which have since been shown in increased output and a considerable decline in prices and purchasing power. From 1917 to 1921 the purchasing power of both table and wine-grape varieties rapidly doubled and actual prices, because of the great decline in the purchasing power of the dollar, rose even faster. Since 1921 their price and purchasing power has declined precipitously. Returns per ton on California table-grape varieties have been below pre-war purchasing power in the last two years and, if anywhere near full crops are produced, will probably remain near this low level for the next few years. With an outlook for a considerable increase in the

[63] H. R. Wellman, "Apricots," California Agr. Exp. Sta. *Bulletin* 423 (Berkeley, 1927), pp. 5–6.

normal production of wine-grape varieties for several years, it seems probable that the purchasing power of these grapes will fall below the level of 1926. . . .

. . . Full-bearing acreage of all three classes of grapes has increased rapidly since 1919. All but raisins indicate a further increase until 1929.[64]

The above excerpts indicate that the 126-page bulletin undertook to give farmers the unvarnished facts regarding their grape price prospects. Some of the bulletins were not popular with the farmers because they indicated a pessimistic outlook.

The economics of the California dairy industry stressed the need of outlook studies in these words:

California cannot be detached from the United States in any consideration of the dairy industry. In turn, a view of the world situation must be obtained in order to understand present domestic conditions and to formulate future policies. . . .

. . . *Additional butterfat will be needed and a steady, conservative growth should be contemplated. The growth in the numbers of cows should proceed more slowly than that of population or butterfat. If the state is to continue to produce large amounts of butterfat for other than market-milk purposes it must do so on the basis of cows of higher producing ability.*[65]

A bulletin on beans reached the following conclusion with respect to the outlook:

From the standpoint of California growers the most significant developments in the United States foreign trade in beans are (1) that we are gradually losing our foreign markets, and (2) that we now have a relatively large potential foreign competition which we did not have before the war. The Orient, which produces varieties of beans similar to those grown in California, has become an important exporter. This competition of the Oriental beans will tend to check any continued rise in the domestic prices of those varieties with which they compete, primarily Large Whites, Small Whites, and Pinks.

Bean growing is a speculative business. Prices of each variety fluctuate widely from year to year. The direction and extent of these price fluctuations cannot be forecast accurately at the time of planting. Over a period of years, however, a consistent relationship tends to be maintained between the average prices of the different varieties. These probable average prices coupled with the known yields that growers can obtain under their particular conditions will give them an indication of the variety that will be profitable on their lands. Such a forecast may not prove correct for any given year, but for a series of years the bean growers who are permanently in the business will find it profitable to make such calculations. Further developments may cause permanent changes in the trends of bean prices given in this bulletin, but these are not yet apparent from the facts we have been able to gather. Certainly, however, any radical increase in bean acreage here or elsewhere is likely to be felt by California bean growers. The present production of beans is adequate for national consumption at the present level of prices.

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[64] S. W. Shear and H. F. Gould, "Economic Status of the Grape Industry," California Agr. Exp. Sta. *Bulletin* 429 (Berkeley, 1927), pp. 3, 5, 7, 8, 10, 35.

[65] E. C. Voorhies, "Economic Aspects of the Dairy Industry," California Agr. Exp. Sta. *Bulletin* 437 (Berkeley, 1927), pp. 5, 8.

There seems to be, therefore, no justification for an increase in bean acreage.[66]

Similar studies were made of apples, watermelons, and pears.[67] The outlook for the almond grower in California was, in general, unpleasant. The almond enterprise with production far below the demand in the domestic market, and with a protective tariff is, on the average, an unprofitable one. Obviously the natural conditions are not favorable.

> The commercial production of almonds in the United States is practically confined to California. . . . Since 1914 the bearing acreage has increased rapidly and continuously, until at the present time [1928] there are approximately 87,000 acres in bearing. . . .
>
> . . . California marketing organizations now have to find outlets for five times as many almonds as they did before the war. The development of these outlets has been made particularly difficult by the wide fluctuations in production from year to year. . . .
>
> The average yield of almonds for the state as a whole is unprofitably low. Even with the relatively high prices which have prevailed during the last three years, the average gross income has not generally been large enough to pay the costs of production. Under most conditions yields as low as the present average for the state effectively prevent profitable returns.
>
> Despite the greatly increased production of almonds in the United States, the nation now produces only one-fourth of the almonds consumed in this country. The remainder is imported, mainly from Italy, Spain, and France. . . .[68]

The outlook prompted the authors to advise:

> . . . any widespread planting of almonds does not appear to be justified. . . . The best outlook for California almond growing is through increasing the yield per acre. Yield is chiefly a matter of varieties, cultural methods, and favorable climatic location, including proper moisture conditions and freedom from frost.[69]

The outlook for profits in orange production led the agricultural economists to say:

> From the standpoint of the individual orange grower the possibility of obtaining increased returns in the future lies largely in more efficient production. New planting should be made only in localities having favorable climatic and soil conditions, and where high yields of good quality fruit can be obtained. From the standpoint of the industry much progress has already been made in developing new outlets, increasing demand, and improving the quality and pack. With increased production more effort along these lines will be needed.[70]

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[66] H. R. Wellman and E. W. Braun, "Beans," California Agr. Exp. Sta. *Bulletin* 444 (Berkeley. 1927), pp. 6–7.

[67] California Agr. Exp. Sta. *Bulletins* 445, 449, and 452 (Berkeley): E. Rauchenstein, "Economic Aspects of the Apple Industry," (1927); E. Rauchenstein, "Economic Aspects of the Watermelon Industry," (1928); and S. W. Shear, "Economic Aspects of the Pear Industry," (1928).

[68] H. R. Wellman and E. W. Braun, "Almonds," California Agr. Exp. Sta. *Bulletin* 453 (Berkeley, 1928), pp. 3–4.

[69] Wellman and Braun, "Almonds," p. 5.

[70] H. R. Wellman and E. W. Braun, "Oranges," California Agr. Exp. Sta. *Bulletin* 457 (Berkeley, 1928), p. 4.

While two states, California and Florida, are almost the sole competitors for the domestic orange market, they are severe competitors of each other and are producing a surplus of nearly ten per cent for the export market. Yet the orange producer appeared in 1928 to be in a more favorable position in California than the almond grower who had no domestic competitor, who had the benefit of a protective tariff, and whose product met only one fourth of the home demand.

Several other commodities were studied in a similar manner in the years 1928 to 1932. These included cherries, grapefruit, lemons, peaches, plums, prunes, olives, asparagus, lettuce, alfalfa, barley, wheat, beef cattle and sheep.

In December 1930 a general report on the economic problems of California agriculture was prepared for the governor of the state. The central theme of that report is indicated by these excerpts:

. . . The State should expand the collection, interpretation, and dissemination of information regarding market conditions and the outlook for individual crops, livestock, and livestock products. Emphasis should be placed upon providing information about the possibilities of expanding domestic markets and developing foreign outlets for California products. . . .

Upon the individual farmer depends a considerable part of the improvement of agricultural conditions in California.

Many farmers can improve their returns by better and more careful selection of crops and enterprises adapted to the physical conditions of their farms, the labor available, and to the outlook for future prices. In some cases this involves diversification and the production of a variety of products, in a few cases it may mean more specialization, and in others more production for home consumption. Often an increase in the size of the farm is the most effective way of increasing returns.

Individuals will facilitate improvement by giving greater attention to the information now available for the asking and especially by keeping more and better farm and home accounts. Accounts serve to answer questions relating to the most profitable combination of enterprises, the best methods to be used in production, the desirability of changing the size of the farm, and the necessity for abandoning unprofitable enterprises and marginal farms. The value of a farmer's own accounts is increased by comparing them with those of other farmers.

The individual farmer can improve his situation by exercising care in selecting the agencies through which he will market his products and by participating in group action where it is more effective than his own individual efforts. . . .

. . . there is often an inclination to think that defects in the marketing system are responsible for conditions which are really due to excessive production or to high fixed charges, such as transportation, labor, and packages, over which marketing agencies have little control. . . .

Excessive supplies at times depress market prices to ruinously low levels. Supplies may be excessive because plantings have been too heavy, because the weather in a given season may have been unusually favorable or pests scarce, or because demand has fallen off. Under such circumstances surplus-control plans are socially desirable to prevent market demoralization. In at least seven instances, organized plans for the control of such surpluses are being operated in California. The California Fruit Growers Exchange has

developed a plan for manufacturing surplus lemons into by-products. The Rice Growers Association of California, in cooperation with other agencies engaged in rice marketing and milling, has for several years operated a plan for the exportation of excessive supplies. In the case of the grape industry, an elaborate plan of surplus control backed by the Federal Farm Board has been put into operation. In the canning peach industry a carefully planned scheme for the same purpose was developed for 1930. The latter involved the cooperation of a group of canners and several cooperative associations. In Los Angeles the milk surplus is being handled by an association formed for the purpose by a group of dealers and producers. The Central California Berry Growers Association has been using a plan whereby surplus berries are sent to canneries whenever prices would drop to ruinous levels if the entire supply were left on the market. The Imperial Valley lettuce and cantaloupe clearing houses have restricted shipments by higher grade requirements and by prorating of shipments among members.

The experience arising out of the operation of these plans should be used to point the way for sound developments in other industries as needs arise. Any such plans are expensive, however, and can not be viewed as substitutes for the adjustment of acreages to demand, either before or after such difficulties arise. . . .

Excessive production and declining prices of many commodities in recent years have served to focus the attention of many producers on the possibility of increasing their incomes by planning their production in the light of the outlook for the commodities they produce and by keeping the organization and operation of their farms adjusted to changing market conditions. Economic conditions are continually changing and one who expects to obtain a satisfactory income year after year must make every effort to keep his operations adjusted. This requires a knowledge not only of what changes are occurring and what the trend in the prices of products is likely to be, but also how these trends are likely to affect the farm business and what results are to be expected from any changes the farmer may make. More and more information from all parts of the United States and foreign countries bearing on the outlook for California products is becoming available, and many producers would benefit by studying this information more carefully when making their plans.[71]

Studies of the economics of specific farm enterprises in California showed many instances of overexpansion but little opportunity for increasing production. Curtailment of production or expansion of markets was clearly needed. Opportunities to adjust production by abandoning less productive enterprises and shifting to more profitable ones were not evident, although the idea was ever in the foreground. The search for new markets was a more acceptable suggestion to the individual producer than the reduction of the quantity produced. Disposal of surpluses in various ways provided an opportunity for group action and for that reason made greater headway than production adjustments which, at that time, depended upon individual action.

The farmers of southwestern Missouri who produced strawberries largely by the employment of family labor had higher levels of living than farmers in other parts of the Ozark region where that cash crop had not been introduced. Chambers of Commerce in trade cen-

[71] "Economic Problems of California Agriculture," by the Agricultural Economics Staff, California Agr. Exp. Sta. *Bulletin* 504 (Berkeley, 1930), pp. 6–9, 65, 67–68, 74.

ters outside the strawberry growing area were trying to stimulate farmers of their trade areas to grow strawberries. The question that arose in the mind of the farm economist was how much can the production be expanded without glutting the market and thus taking away the benefits from those already growing strawberries. That approach led to a thorough and comprehensive study of the conditions and costs of production, methods of marketing, and competitors in the market at the time of year when Missouri strawberries were upon the market.[72] The co-operative system of marketing with local associations federated into central marketing agencies was described. The importance of standardization and high quality of product was emphasized. Attention was called also to the consideration of alternative cash crops. The 138-page bulletin was doubtless overwhelming to most of the strawberry producers, but its comprehensiveness made it the basis for a sound educational program.

The next year the university issued a bulletin on the production and marketing of grapes,[73] similar to the one on strawberries. The grape study was clearly an outlook report. The purpose was to guide production in the light of future prospects. Another production and marketing study with emphasis upon price outlook was a study of sweet potatoes. Points emphasized were:

> The two most important factors influencing the acreage planted to sweet potatoes in the United States each year are the prices received for sweet potatoes and cotton the preceding year.
>
> Cotton prices influence the acreage of sweet potatoes because the latter constitute a substitute crop. . . .
>
> . . . changes in acreage have accounted for approximately 69 per cent of the annual variations in production, which in turn explain about 60 per cent of the annual fluctuations in sweet potato prices. White potato prices, the other factor influencing sweet potato prices, may be forecast by methods worked out by other investigators. Therefore, by combining the proper values . . . we could make a quite definite forecast of sweet potato prices each year. . . .
>
> Missouri has an advantage over the principal Jersey type producing sections in freight rates to cities west of Chicago, but not to Detroit and similarly located markets. The advantage in the case of Chicago amounts to about ten cents per bushel.[74]

Similar studies were made in several other states for the purpose of providing information that might help farmers to plan their production and marketing programs in the light of the cost and price outlook for specific commodities.

An adequate outlook service called for facts from abroad as well as from the various sections of the United States. Much of the desired data from foreign countries was obtained through the International

[72] F. L. Thomsen and G. B. Thorne, "Economics of Strawberry Production and Marketing in Missouri," Missouri Agr. Exp. Sta. *Bulletin* 262 (Columbia, 1928).

[73] F. L. Thomsen and G. B. Thorne, "Economic Position of the Grape Industry in Missouri," Missouri Agr. Exp. Sta. *Bulletin* 273 (Columbia, 1929).

[74] F. L. Thomsen and W. R. Fankhanel, "Factors Affecting Sweet Potato Prices in Missouri," Missouri Agr. Exp. Sta. *Bulletin* 302 (Columbia, 1931), pp. 11–12, 20.

Institute of Agriculture at Rome, Italy, but, in order to supplement the material received from that source, men were sent abroad to gather data regarding agricultural production and demand. Some of these representatives of the Bureau of Agricultural Economics were in deficit areas for our major export staples, and some were in areas competing with the farmers of the United States in supplying the deficit areas.

APPRAISAL OF OUTLOOK STUDIES

In general, the series of local market studies was disappointing from the standpoint of finding opportunities for readjustment in production that would turn energies toward producing for the local market and relieve the market for the major staples of agriculture from burdensome surpluses which had depressed prices. Local market studies were, as a rule, too narrow in outlook, and too rarely showed the relative profits to be obtained from the proposed new ventures when compared with the old. Perhaps the most useful of the studies were those of northern Indiana and South Carolina. They considered prospective costs, prices, and relative profitableness. Perhaps it was because farmers knew their local markets and had already made the profitable adjustment to local market demand that the economists found so little to recommend. It is regarding distant markets which must be reached through middlemen that farmers especially need information. The experiment in local market studies soon gave way to other lines of research.

The economic study of specific commodities in the light of supply and demand in the total market area would seem to have been far more likely to provide the data the farmer needed as a basis of readjusting his enterprises than were the local studies. The outlook service, as an effort to provide the fact basis for solving the farmer's surplus problem through agricultural adjustments, did much to broaden the study of farm management and to emphasize dynamic aspects of farm economics, but it fell far short of fully meeting the farmer's needs. It became more and more the belief that while agricultural adjustments should continue to be made by the individual farmer, with a view to maximum profits possible under existing conditions, they were by no means the whole answer to the problem of depressed prices. In what measure the hope for price maintenance by the government was a factor in reducing the effectiveness of the outlook service has not been determined. But it is believed that even if agricultural production had been readjusted perfectly it would not have fully overcome the disparity in farm prices, because the degree of limitation of competition in many other occupations is greater than it is in agriculture.

Agricultural economists recognized that a major difficulty arose from the fact that, while farmers competed freely with each other

in producing goods and putting them on the market where they were sold for what they would bring, city industries could limit their production to the amounts that could be sold at a remunerative price. Labor was far more effective in restricting competition and maintaining wage rates than were farmers in limiting production and maintaining prices of their products. It soon became clear to agricultural economists and to some farm leaders that the limitation of competition in other occupations was a fundamental cause of the price disparities from which farmers suffered. But the suggestion of freer competition on the part of capital and labor which would lower the price of things which farmers buy was met with far greater resistance on the part of capital and labor than was the idea of federal aid in price improvement for farm products. It seemed obvious to farm leaders, therefore, that direct action to limit agricultural competition was the line of attack most likely to restore the purchasing power of farm products.

The first move was to try to control prices through orderly marketing by centralized co-operatives. It was soon learned, however, that orderly production was essential to orderly marketing. While the co-operatives were struggling with that problem, unable to stem the tide of increasingly burdensome surpluses, the Federal Farm Board was created, in 1929, and provided with $500,000,000 with which to help the co-operative associations meet the problem of price stabilization. The Farm Board soon came to the conclusion that production control was essential to price maintenance, and the stage was set for more direct federal action.

In 1930 Frank O. Lowden suggested that the reduction of surpluses be sought through a program that would provide for soil conservation:

> Suppose, now, that the states, fully conscious that their arable lands were their best heritage, were to say to the owners: Plant an additional 15 or 20 per cent of your lands to some legume and while that portion of your farm is resting from its labor and regenerating itself for the benefit of those who come after us, we will exempt these lands from all taxation. If this alone were not inducement enough to the owners, the Federal Government might well, in coöperation with the states, pay a reasonable bounty to the owners of these lands while they thus kept them out of cultivation. . . . Everyone is familiar with the bounty several of the nations have paid for the culture of sugar beets. Surely if a bounty to the farmer is justified for turning from one crop to another, it is more than justified when the purpose is to conserve the soil for future generations. The United States Government now receives in customs duties from two hundred to two hundred and fifty million dollars a year on the importation of products of the soil. The total acreage in cultivation in the United States amounts to three hundred and sixty-five million acres. If 20 per cent of this acreage were to go into legumes—and surely no soil expert would say that this at least is not needed—and a bounty of two dollars an acre were paid by the Federal Government upon every acre withdrawn from cultivation, it would cost the Government annually less than one hundred and fifty million dollars, or considerably less than it now

receives through its custom offices in the supposed interest of agriculture.

I throw this out only by way of suggestion. It may be that a better method can be found. I submit, however, that there is something fundamentally unsound in our national economy when we go on robbing the soil of fertility it will need in the future by employing it in the present for producing something without which we would be better off.[75]

[75] F. O. Lowden, "Presidential Address," American Country Life Conference, *Proceedings,* 1930 (Chicago: The University of Chicago Press, 1931), pp. 8–9.

PART FIVE

MARKETING FARM PRODUCTS

18.

Prices of Agricultural Products

This section sketches briefly the development of the price series for farm products that were collected and tabulated by the U. S. Department of Agriculture. It also touches upon the attack made on middlemen by J. A. Everitt of the American Society of Equity, and quotes ideas concerning prices of farm products expressed by several agricultural economists. There is also a brief summary of price trends, price ratios, and the share of agriculture in the national income from 1909 to 1926.

The review of prices has been approached from the standpoint of production and from the point of view of marketing. In fact, value and price run through every phase of economics. Some of the statements on prices have been brought together in this chapter. Many other statements on prices have been included in the chapters on production and marketing because they are a part of the context. This chapter should not be looked upon, therefore, as the full report on thought and action relating to prices.

U.S.D.A. Price Reporting

The U. S. Department of Agriculture and its predecessor, the agricultural section of the Patent Office, gathered crop statistics with a view to giving farmers the information needed for intelligent marketing of their products. In order to estimate the probable effect upon prices of a given increase or decrease in the annual production of specific farm products, it was necessary for the farmer to know how prices had fluctuated from year to year as a result of changes in the quantities produced. Systematic gathering of statistics of the prices farmers received for their products at their local markets was undertaken in the winter of 1862–63 for the crops produced in 1862.[1]

During last winter he [the Commissioner of Agriculture] issued circulars to every county in the loyal States, making inquiries relative to the prices of agricultural products in them and the average yield per acre of the lead-

[1] U. S. Commissioner of Agriculture, *Report,* 1862 (Washington, 1863), p. 574.

ing crops. . . . The prices for 1863 were taken in November of that year, and for 1864 on the 1st day of January, 1865.[2]

These early reports on prices showed the value per bushel, pound, or ton, as of January 1, 1863, of corn, wheat, rye, oats, barley, buckwheat, potatoes, tobacco, and hay, by states, excepting the southern states.[3] The average price and total value of horses, mules, sheep, cows, other cattle, and hogs were first given for January 1865.[4] Thus began the collecting of price statistics on farm products through crop correspondents. The work was expanded and refined through the years, and has provided the price series so useful in studying the relation of supply to the price of farm products.

Other data, such as growth of population and the degree of prosperity in the non-agricultural occupations, must be taken into account, of course, along with production and price relations in judging the price outlook. Prices received for the corn crop of 1863 were about double the prices of 1862. Other prices ranged from 22 per cent higher for wheat to 70 per cent higher for oats. That increase was explained in terms of a shorter crop, government demand, and inflation of the currency.[5]

Until 1872, crop prices, as well as livestock values, were collected as of January 1. Thereafter prices of crops were collected as of December 1. Commencing with January, 1908, but omitting February of that year, farm prices of the principal farm products were collected and published as of the first of each month. That addition to the service was initiated by Nat C. Murray who, in 1907, had been transferred from the field service of the Bureau of Statistics to the Washington office and made Assistant Statistician. In writing about the need for monthly reports of prices received by farmers, Murray said:

> Values of crops prior to 1908 were based upon prices as reported on December 1 multiplied by the estimated production. This bothered me because the relation of December 1 price, to average year's price, differed with different crops. Thus the price of corn is normally relatively lower on December 1 than is wheat.[6]

Murray simplified and reorganized the work of the clerical staff so that the additional work was taken on without additional expense.[7] Average monthly farm prices were reported in January, 1908, for corn, wheat, oats, barley, rye, buckwheat, flaxseed, potatoes and hay. In March, 1908, cotton was added, and in February, 1909, butter, chickens and eggs were added to the list. Those average monthly farm prices were based on reports from the crop reporters of the Bureau

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[2] *Report*, 1864, p. 578.
[3] *Report*, 1862, pp. 577–88. Note: The *Report* for 1866 was the first to include data from the southern states (pp. 53–60).
[4] *Report*, 1864, pp. 581–90.
[5] *Report*, 1863, pp. 603–04.
[6] Letter from N. C. Murray to H. C. Taylor, March 4, 1949.
[7] N. C. Murray, "A Close-Up View of the Development of Agricultural Statistics From 1900 to 1920," *Journal of Farm Economics*, 21:712–13 (November 1939).

of Statistics.[8] Having thus established the collection of first-of-the-month prices for the major farm crops, the next move was to obtain monthly farm prices of livestock and minor crops. In order to spread the load in the tabulating section of the bureau, Murray suggested that prices be reported for the new series as of the fifteenth of the month. Items to be included in the new fifteenth-of-the-month price list were enumerated in the report of the Chief of the Bureau of Statistics for the year ended June 30, 1910:

> Commencing with February, 1910, there was inaugurated a special monthly schedule of inquiry concerning the monthly [farm] prices of numerous farm products, including rice, clover seed, tobacco, sweet potatoes, cabbages, onions, beans, apples, peaches, pears, quinces, cranberries, broom corn, oranges, lemons, hops, peanuts, wool, milk, honey, milch cows, veal calves, beef cattle, sheep, lambs, hogs, horses. . . .[9]

Prices of 19 of the commodities mentioned above were published for February 15, 1910, and for the fifteenth of each month following, and others of the items were added from time to time. In March, 1913, egg prices, and in May, 1913, chicken prices were transferred from the crop reporter schedules to the price reporter schedules and given as of the fifteenth of the month.

As to the source of the price data on that list of minor products, the report said only that they were "based upon returns received from inquiries of the Bureau of Statistics of the Department of Agriculture."[10] However, Murray was thinking in terms of obtaining the desired information without putting too heavy a burden on the reporters. He tells us: "If I remember correctly the *special* price reporter list was established soon after monthly prices were begun. This was to avoid burdening the regular crop reporters with too many questionnaires."[11] On that point Roger F. Hale stated, "Special lists of local merchants and buyers of agricultural produce were developed . . . [in 1910] as a source of information on monthly prices of minor crops, livestock and livestock products."[12]

The practice of collecting reports of first-of-the-month farm prices for principal farm products, and fifteenth-of-the-month farm prices of animals and animal products and minor crops was continued until the end of 1923, after which all monthly farm price reports were published for the fifteenth of each month. The notice of the change stated:

> Instead of reporting some farm prices as of the 1st of the month and others as of the 15th of the month, the farm prices published by the Division

[8] See U. S. Department of Agriculture, Bureau of Statistics, *Crop Reporter*, 10(2):9 (February 1908); 10(3):17 (March 1908); and 11(3):19 (March 1909). See also U. S. Department of Agriculture, *Yearbook*, 1909 (Washington, 1910), pp. 576, 588–89; and C. F. Sarle, "Reliability and Adequacy of Farm-Price Data," U. S. Department of Agriculture, *Department Bulletin* 1480 (Washington, 1927), p. 6.

[9] U.S.D.A., *Annual Report*, 1910 (Washington, 1911), p. 696.

[10] U.S.D.A., Bureau of Statistics, *Crop Reporter*, 12(5):37 (May 1910).

[11] Letter from N. C. Murray to H. C. Taylor, March 4, 1949.

[12] R. F. Hale, "Estimating Local Market Prices and Farm Labor Since 1920," *Journal of Farm Economics*, 21:829 (November 1939).

of Crop and Livestock Estimates will refer to prices paid to producers the 15th of each month. The change began with January 15, 1924. Prices collected on the 1st of each month have been converted to the 15th by averaging the 1st of the month prices for two consecutive months. The publication of crop prices for December 1 each year and of livestock prices for January 1 will be continued.[13]

This was not a radical change. A special list of price reporters had been used since 1910 for livestock, livestock products, and minor crops. In October 1923, those price reporters received an expanded schedule calling for the prices paid to farmers for 58 farm products. That schedule included the major crops on which the crop correspondents had reported prices since 1908.[14] Thus there was a period of at least three months when both the crop correspondents and the price reporters sent in monthly prices on the major crops. It was the regular practice of the crop estimating board to experiment with a new source of information before discarding the old source and depending upon the new.

As to the sources of information used in preparing the monthly reports on prices paid to farmers, a history of the reporting service, prepared in 1933, said:

> The most reliable sources from which current, local market, or farm price data on farm products are gathered may be classified into seven groups: (1) County mill and elevator operators, (2) managers of local creameries and milk-receiving stations, (3) country merchants, (4) farm-produce dealers at local shipping points, (5) cooperative marketing organizations, (6) country bankers, and (7) well-informed farmers.[15]

The series of farm price reports are enumerated:

> Three distinct types of price series are collected by the Division of Crop and Livestock Estimates: The annual estimates of December 1 farm prices of crops and January 1 farm values of livestock which constitute the oldest series, beginning in 1867; the 15th-of-the-month farm prices of commodities sold by farmers, which were first collected in 1908, for [major] crops, and in 1910, for livestock and livestock products [and minor crops]; and the prices of articles bought by farmers, beginning in 1910.[16]

Some ideas about the significance of price data are presented in the same report:

> An adequate knowledge of relative changes in farm prices, especially as they compare with the trends of other prices, wages, land values, and so forth, is fundamental as a basis for an intelligent, constructive program for agri-

[13] U.S.D.A., *Crops and Markets, Monthly Supplement*, 1(2):53 (February 1924).

[14] The price reporters were addressed as follows on Oct. 10, 1923: "Dear Sir: The Bureau of Agricultural Economics of the Department of Agriculture desires to record the average prices paid to producers in each State for various farm products on or about the 15th of each month. For this purpose you are respectfully requested to report on this schedule the average prices paid to producers in your market, about October 15, for such products as you are familiar with. As only one quotation is desired for each product, it should be representative of all transactions; that is, such a price as, if multiplied by the total quantity sold by the producers, would give approximately the total value of all such sales." U.S.D.A., Bureau of Agricultural Economics, Division of Crop and Livestock Estimates, Schedule C. E. 2–1044.

[15] "The Crop and Livestock Reporting Service of the United States," prepared by the Statistical Staff of the Division of Crop and Livestock Estimates, Bureau of Agricultural Economics, U.S.D.A., *Miscellaneous Publication* 171 (Washington, 1933), p. 61.

[16] "Crop and Livestock Reporting Service," p. 59.

culture, whether of Federal or State agencies, or of organizations of farmers.

Prices and price changes are both causes and effects in the field of economic phenomena. In the long run the prices of farm products tend to control the supply. Changes in farm organization and types of farming can frequently be traced to absolute and [to] relative changes in farm prices. For many problems of this kind it is desirable to have a price series which represents price changes in the local farm market and at the same time is a composite for a definite geographical unit, such as a State, as well as a composite for the entire crop, including all grades and classes.[17]

In 1926 and 1927 the U. S. Department of Agriculture assembled the accumulated data on prices received by farmers in their local markets. Insofar as possible, the annual price series date from 1866 and the monthly prices from 1908.[18]

Toward the end of the first decade of the twentieth century the gradual rise of prices resulted in considerable agitation regarding the increased cost of living. To ascertain the facts, the Bureau of Statistics sent a letter of inquiry in 1910 to a large number of retail dealers doing business with farmers. That letter, accompanied by a list of about 85 articles generally used by farmers, asked for comparative prices of the same grade of articles in 1899 and 1909.[19] Results of the inquiry, when tabulated and compared with prices received by farmers, showed that the purchasing power of one acre of corn in 1909 was 60 per cent greater than in 1899, that of wheat 91 per cent greater, that of cotton 48 per cent greater, and the average of all crops 54 per cent greater than in 1899. In his annual report for 1910, Victor H. Olmsted, Chief of the Bureau of Statistics of the U. S. Department of Agriculture, said:

> Quietly the farmer has been rising from the depths into which he was cast by the ruinously low prices in the early nineties until now he has reached a plane where he receives a well-deserved recompense for his labors. Probably never before has the average farmer been in better condition than in recent years. Farmers are rapidly acquiring the modern conveniences formerly possessed only by those living in cities, such as furnace-heated houses, water and bath facilities, free mail delivery, telephones, etc., and, with good crops commanding remunerative prices, he is becoming more and more able to secure such conveniences and to indulge in many luxuries enjoyed previously only by the prosperous in urban communities.[20]

J. A. Everitt and the American Society of Equity

While those in charge of collecting price data in the U. S. Department of Agriculture held to the supply and demand theory of prices, and endeavored to provide facts regarding production and prices that would enable farmers to adjust supply to demand on the basis of a satisfactory price, there were others who held that prices were controlled by middlemen. J. A. Everitt, of Indianapolis, Indiana, and

[17] "Crop and Livestock Reporting Service," p. 59.

[18] See "Prices of Farm Products Received by Producers," U.S.D.A., *Statistical Bulletins* 14 (North Atlantic States); 15 (North Central States); 16 (South Atlantic and South Central States); and 17 (Mountain and Pacific States). (Washington, 1927.)

[19] See U.S.D.A., *Annual Report,* 1910 (Washington, 1911), pp. 716–17.

[20] U.S.D.A., *Annual Report,* 1910 (Washington, 1911), p. 716.

the American Society of Equity, which he created, did much to arouse interest in prices on the part of farmers and at the same time to create confusion. Everitt repudiated the supply and demand theory of prices and claimed prices were largely the result of manipulation. While Everitt's statements were not based upon a careful study of the facts, they are a part of the history because of the influence they had on farmers in the first and second decades of the twentieth century. Everitt said, in 1903:

> . . . the farmer allows others to make prices for him. All he is supposed to know under the present system is how to work sixteen hours a day and the road to market. When he gets there he finds a man who tells him how much his produce is worth, and if he wants to take something home with him he is told the price of that also. He has no organization, and no method of bringing pressure to bear on those who buy from him. Speculators and gamblers on boards of trade tell him what he shall sell his produce for. And he sells at their figures. The board of trade gamblers juggle with the price, and, though the condition of the crops and production and consumption should govern prices, they have very little influence. The prices of the important farm crops are made in organized markets by great aggregations of corporate capital ruled by unscrupulous human agencies, or by speculators who set prices arbitrarily without any reference to supply, demand or equity. This arbitrary fixing of prices destroys the independence of the greatest class of our citizens—the farmers—and is more tyrannical than were the taxes imposed by George III. This is because the farmers are unorganized, and usually without a knowledge of the real conditions. Commercial slavery of this degree is as bad as personal slavery. Thus the greatest class in the production of wealth, on which all others depend, is at the mercy of a few.[21]

Prices Studied at University of Wisconsin

The Wisconsin State Union of the American Society of Equity was organized in 1906. Agitators of that organization followed the Everitt doctrine as stated in his own words above. This activity was a factor in arousing interest in prices among Wisconsin farmers. By 1910 the College of Agriculture of the University of Wisconsin recognized that the time had come to include the subject of prices in the program for Farmer's Week. H. C. Taylor was asked to discuss prices with the farmers during that week in the winter of 1910–11. Taylor presented an illustrated lecture on the prices of eggs, butter, and cheese which showed the way the month-to-month prices of eggs fluctuated as the supply reaching the market fluctuated, but also showed how stable was the price of butter and cheese in spite of wide fluctuations from season to season in the supply. The purpose of the presentation was to help the farmers understand the facts about prices in order that their organized efforts might be directed along sound lines. Material used on that occasion was published by the Wisconsin Agricultural Experiment Station.[22]

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[21] J. A. Everitt, *The Third Power, Farmers to the Front* (Indianapolis: The Hollenbeck Press, 1903), pp. 5–6.

[22] H. C. Taylor, "The Prices of Farm Products," Wisconsin Agr. Exp. Sta. *Bulletin* 209 (Madison, 1911).

In that bulletin emphasis was laid upon the forces and conditions which lie behind supply and demand. The elasticity of supply and of demand, annual and seasonal variations in supply, the standardization of the product in relation to price, durability of the product, warehousing and cold storage in their relation to price, were subjects discussed. The relation of prices to farm management was stressed. This statement will illustrate:

> The modern farmer plans his crop rotations and his feeding and grazing of livestock with his eyes upon the market as well as upon the field. . . .
>
> The first step in the study of the market is to get a clear notion of the various causes which tend to raise or lower prices. There are those who attribute great power to a few individuals, who, it is believed, fix prices at will to suit their own convenience and profit. A study of the various causes which determine prices shows the question to be much more complex and more beyond the control of man than this view seems to imply. . . .
>
> Values may fluctuate from year to year because of changes in the quantity produced, or changes in the quantity demanded, that is, changes in the supply or in the demand. Fluctuation in the annual production may be due to the climate, to the ravages of insects, or to the conscious changes in the plans of a considerable proportion of the producers. The more durable the product, the less the value will fall as the result of an unusually large crop. A portion of the supply can be held over until the next year. The fact that wheat can be held over at a relatively small cost and without losing its usefulness, while potatoes of one year's production have little value after the new crop becomes generally available, explains in part why a given variation in the wheat crop influences the price less than the same proportional variation in the potato crop. . . .
>
> The prices of farm products are influenced by the fact that most of the supply of a given product becomes available during a small portion of the year and this supply must last until the next year's supply is ready for use. . . . The tendency is for the price to be low when the greatest supply becomes available and high in the period prior to the arrival of the new supply.
>
> The demand for commodities varies greatly with respect to its elasticity. By elasticity of demand is meant its sensitiveness to changes in the price or the quality of the product. A stable demand is one which is not easily influenced by changes in the conditions of supply and price. . . .
>
> Where substitutions are easy the quality of the product affects greatly the quantity demanded. . . .
>
> The demand is steadier for established grades, that is goods of standard qualities, than for unstandardized articles. . . .
>
> It is essential to good farm management that the farmer understand the trend of prices in order that he may plant and breed to suit the future market on which his products must be sold. . . .
>
> It has been common to hear the statement "The price should be high enough to pay the cost of production and a reasonable profit." This phrase when properly understood is full of significance. It is a misinterpretation, however, to assume this phrase to mean that every producer of a given product has a right to expect and to demand a price which will cover *his* costs and give him what *he* considers a reasonable profit.
>
> Costs in a given locality vary greatly because of differences in the men in charge of the farms. Costs vary greatly in different regions owing to differences in soil and climate, the character and abundance of the labor supply and the location with respect to the market. . . .
>
> It usually happens that there is an inefficient producer here and there

who is producing at a cost greater than the price at which other farmers find it profitable to produce enough to supply the demand. Suppose the price were artificially pushed up to a point where the inefficient farmer can make a profit. This would make the enterprise exceedingly profitable to the efficient farmers, and would tend to increase their production, the greater supply would force prices down and the second state of the inefficient farmer would be worse than the first. . . .

. . . costs are greater in some regions than in others. The wheat regions of the world are numerous and widely scattered. The cost, per bushel, of producing wheat and putting it upon the world's central wheat market, Liverpool, vary greatly. During periods when the supply of wheat is increasing slowly and the demand for wheat is increasing at a slightly more rapid rate the price of wheat will tend to remain high enough to retain the wheat industry in the region where the costs are greatest. When, however, as a result of a new discovery or the extension of means of transportation a new and fertile wheat region enters into competition with the old regions it may happen that the supply of wheat will increase more rapidly than the population and to induce the people to consume more wheat per capita the price must be lowered. As a result of the fall in the wheat price some of the old wheat regions will find their costs greater than the prices they can get. . . .

The choice of crops and of livestock is not the only point where prices are controlling factors in the management of a farm. There is a close relation between the price of products and the degree of intensity of culture which will prove most profitable. High prices for products usually results in high land values. High land values make it profitable to use land more sparingly. For example fewer acres should be used for a herd of a given number of cows, or what is the same thing, more cows must be kept on a given area than formerly if the farmer is to secure maximum profits from high priced land. This means more intensive culture.

These illustrations should be sufficient to show that the farmer's interest in prices begins long before his product is ready for the market, and that he should study prices as a farm operator as well as a seller of farm products if he would make his farm yield maximum profits.[23]

The outlook service initiated in 1923 by the Bureau of Agricultural Economics was based upon those same ideas with regard to production and prices.

Prices Studied by Warren at Cornell

Farm management studies soon led George F. Warren to an interest in the prices of farm products. In 1914 he issued a bulletin in which he discussed the relation of crop yields and prices.[24] In that bulletin Warren presented tables and charts giving the trends of prices. Wholesale prices of principal farm products were given from 1840 to 1910. New York farm prices were given for the period 1866 to 1912.

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[23] Taylor, "The Prices of Farm Products," pp. 3–9.

[24] G. F. Warren, "Crop Yields and Prices, and Our Future Food Supply," Cornell Agr. Exp. Sta. *Bulletin* 341 (Ithaca, 1914).

In December 1918, Warren read a paper on price fixing before the American Economic Association, in which he said:

There are three conditions under which price fixing is generally recognized to be essential: (1) when the government is to take all or nearly all of a given product, as in the case of wool in 1918; (2) when a monopoly exists; (3) when a city is besieged.

These are simple cases. The besieged city should take over all of the food supplies and ration the population. Since no food is produced, fixed prices will not stop production. A monopoly must be controlled. The government must have power to take private property for public use.

Aside from the three reasons for price fixing that are enumerated above, there are many other motives, some of which occasionally justify price fixing, but most of which are fallacious and result in public as well as private injury.

Prices may be fixed to try to overcome the effects of inflation. They may be fixed to avoid the necessity for economy. They may be fixed to benefit some class in the population. The reasons for wishing to benefit such a class may be because this class is in control of the government, or because the government is afraid of it, or because votes are desired, or because of a desire to compel some one class to help the poor.

When governments assume the rôle of middleman in international trade, prices become an international question and may be fixed for corresponding reasons. There are many other motives, such as a desire to hold down prices of food so that wages will not rise, thus indirectly reducing the amount that a government must borrow. . . .[25]

The ideally just price is one which will secure a balance between production and consumption. It should be high enough to induce producers to produce as much as consumers are willing to buy at that price. Stated otherwise, it should be low enough to induce consumers to buy as much as producers are willing to produce at that price. To fix a price higher than this is to induce producers to produce more than consumers are willing to buy, leaving unsold and unused a part of the produce of industry. To fix a price lower than the equilibrium price is to induce consumers to try to buy more than is produced, leaving some of them with none at all, or offering a price for something which they can not get at any price. An equilibrium price is the price which a price-fixing board would be compelled to seek. To fix any other price would either leave some producers with a product on their hands which they could not sell, or prevent some consumers from getting something for which they were perfectly willing and able to pay. To prevent the first result, the board would have to be prepared to buy the surplus product of the producers. To prevent the second, it would have to be prepared to ration the consumers.

This equilibrium price which balances marginal utilities and marginal costs is the ideally just price because it is the price which secures for the whole community, made up alike of producers and consumers, the maximum surplus of utility over the disutility or cost. . . .

A price-fixing board must either fix the same price as would be established by the forces of the market, in which case its work would be superfluous, or it must fix a different price. If it fixes a different price it will be wrong unless it can show that the market is not free and open and that therefore the equilibrium price could not be established without its intervention. . . . Unless it can be shown that the competitive processes are interfered with so as to prevent individuals from producing a given commodity and seeking the price which is offered for it, we must assume that the price will tend to-

[25] G. F. Warren, "Some Purposes and Results of Price Fixing," *American Economic Review, Supplement,* 9:233–34 (March 1919).

ward the just level. That is, if it is temporarily too high, or higher than necessary to induce a sufficient production, it will attract other producers, increase the supply and force the price downward. If it is not high enough, it will discourage production, reduce the supply, and force the price upward. No price-fixing board, even if endowed with omniscience, could possibly improve upon this as a method of price fixing. There is danger that it may think that it can, in which case it is absolutely certain to make a nuisance of itself.[26]

The key to Warren's interest in prices is given briefly in two of his statements. In his Annual Report for 1918–19 he said, "Because of the importance of prices in adjusting farm activities, a constant study of comparative prices has been made."[27] In his second bulletin on prices he said, in 1923:

Prices are a guide to production. There is a fundamental relationship between the cost of producing wheat and the cost of producing corn, lettuce, iron, or milk. Therefore if the price of any of these is high relative to the others, the profits from producing it are relatively good. There will then be a tendency to increase the quantity of that product. If the price is relatively low, there is a tendency to decrease production. In 1850, New York had about six times as many sheep as at present, but only a fraction of the present number of hens. The wheat acreage decreased to one-third of what it was in 1844, but it increased again in the World War [I] (1914–1918) period. A constant adjustment of production to price is being made.

When permanent changes in price relationships occur, changes in production are necessary and desirable. But prices are very erratic and it is not easy to tell in advance whether or not a given change is permanent or temporary. Since temporary price changes are so often confused with permanent ones, there is a constant tendency to change production when it should not be changed. In other cases permanent changes are considered only temporary and adjustment comes too slowly.[28]

It will be recalled that Warren made that statement in 1923, the same year that the Bureau of Agricultural Economics of the U. S. Department of Agriculture started the agricultural outlook service as a guide to farmers in adjusting production to demand. Throughout the remainder of his life Warren gave major attention to the subject of prices. In November, 1919, he read a paper on prices of farm products before the American Farm Economic Association and on that occasion he had two themes:

There are two distinct questions concerning prices: 1. Why are prices in general high? 2. Why has the price of a particular commodity followed the course that it has?

The primary reasons for the general high-price level are financial inflation and shortage of goods. The price of a particular commodity is affected by inflation and by other factors that vary with the commodity in question. Some products, as horses, are lower in price than they were before the war. Other things are much higher than the general price level.[29]

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[26] Warren, "Purposes and Results of Price Fixing," pp. 250–51.

[27] Cornell Agr. Exp. Sta. *Annual Report,* 1918–19, p. xxxiii.

[28] G. F. Warren, "Prices of Farm Products in New York," Cornell Agr. Exp. Sta. *Bulletin* 416 (Ithaca, 1923), p. 3.

[29] G. F. Warren, "Prices of Farm Products," *Journal of Farm Economics,* 2(2):61 (April 1920).

Warren then discussed shortage of goods and inflation as causes of high prices and continued:

> The factors that will explain most of the deviations from the general price level are (1) the length of time from the beginning of the production of the product to its completion, (2) the weather, (3) change in demands due to war. Each of these influences acts independently of the others. Some combinations of them working cöoperatively or against each other together with inflation explain most of the individual price curves. . . .
>
> The dollar is no longer a good measure of value (if it ever was a good measure). The best measure of value is purchasing power. Comparisons of wages and prices of particular commodities with the general price level, or purchasing power, furnishes a much safer basis for forming conclusions.[30]

In 1921 Warren prepared a manuscript on prices of farm products, which was published by the U. S. Department of Agriculture, in which he emphasized the relativity of prices:

> No price is high or low except by comparison. If the price of a product has been cut in half it does not mean that the product is necessarily cheap. One must know the general price level in order to make comparisons.[31]

Warren then showed in a chart the influence of three wars upon price trends and emphasized the importance of thinking in terms of the purchasing power of units of farm produce rather than in terms of the price of any one product without regard to other prices:

> A general adjustment to some fairly stable price level will greatly help toward making it possible for each class of workers to use the output of other workers, and thus open the channels of production and trade. Wages, freight rates, retail prices, farm prices need to become adjusted to the same general price level as quickly as possible. Some important things are yet double the prewar price. Others are cheaper than before the war. Industry can not progress in a normal way with such violent maladjustments. Prices and charges that have not been decidedly reduced should come down. Those that have dropped excessively should rise.
>
> Encouragement of exports of farm products will do much to reestablish the buying power of the farmers, so that they can again absorb the products of factories. Since those countries most in need of food have the least credit, the problem is not easy, but considerable is being done. If European demand is to return, a policy of financing exports is better than a readjustment of farming only to have to change back when the demand returns.
>
> If the countries of Europe are to economize so that they will call for less food and clothing from the United States, or if they develop their colonial possessions or otherwise become more nearly self-sustaining our farming must be adjusted to the new conditions. For some years a study of world supply and demand for farm products will be of unusual importance to American agriculture. Until the future demands are better known, it seems desirable not to make too violent changes in our agriculture. If European countries turn to a self-sufficing economy, our farming will necessarily have to be readjusted. If our National policy is to be one of a self-sufficing farm economy, we can for example produce more of our wool and sugar, and produce less cotton and pork for export. A settled national policy must precede a settled farm policy.

[30] Warren, "Prices of Farm Products," pp. 68–69.

[31] G. F. Warren, "Prices of Farm Products in the United States," U.S.D.A. *Bulletin* 999 (Washington, 1921), p. 1.

In any event, the individual farmer may well turn to a more nearly self-sustaining system of farming. Farmers are forced to a policy of retrenchment. Drastic reductions in business costs and living expenses have been necessary. A policy of making the farm produce more of the food for the family and otherwise become more nearly self-sufficient is necessary. This will reserve the income for payment of debts and for necessary purchases.

So far as possible credit should be extended to farmers to enable them to continue to farm in an orderly but conservative manner.[32]

Warren's point of view in price studies was that of the farm manager. That same point of view was retained in the more comprehensive treatment of the subject of prices in his later writings.[33]

F. A. Pearson at Illinois — Milk Prices

In January, 1919, F. A. Pearson, then at Illinois, read a paper at the meeting of the American Farm Management Association, in which he said:

Our economic literature has maintained in general that legally fixed prices are either futile or harmful except in the case of monopoly.

The difficulty of maintaining fixed prices at a point satisfactory to buyers and sellers, the danger of forcing legitimate industry into serious situations, and the risk of curtailing or shifting production have been the primary arguments against such governmental policies, all of which have been abundantly illustrated from the records of such attempts.

Price fixing policies may be said to rest upon legal forces, moral forces, and economic forces. Legal forces rest with physical power which is administered by certain governmental agencies. Moral forces exert their power through honor, public commendation, disgust, and social ostracism. Economic forces exert their influence by changes in production and consumption. The sudden change in our policy from freedom of control to our present day complicated system of price control has outstripped theory.

Our present policy of fixing prices can not be said to be a complete failure as predicted by some, nor can it be said to be a complete success. Success of governmental agencies involved in price fixing rests on the fact that these agencies have been guided by economic forces and have been supported by moral and legal forces. Artificial price-fixing policies must be flexible enough in order that these artificial restrictions will act more or less in the same way as an increase or decrease in consumption, which will be sufficient to counteract changes in supply. Economic forces are, no doubt, dominant, but legal and moral forces may play a large part. . . .

. . . the price of milk should be based upon: (1) Supply and demand, (2) price of butter and cheese, (3) price of butter and corn, (4) competitive commodity prices, (5) year ratios of feed and labor.[34]

Wallace's Ratio Method of Price Determination

Henry A. Wallace made an important contribution to price studies, during the war of 1914–18, by introducing the concept of the hog-corn ratio (the price of 100 pounds of hog divided by the price of a

[32] Warren, "Prices of Farm Products in the United States," pp. 23–24.

[33] See especially, G. F. Warren and F. A. Pearson, *The Agricultural Situation* (New York: John Wiley & Sons, Inc., 1924); and G. F. Warren and F. A. Pearson, *Prices* (New York: John Wiley & Sons, Inc., 1933).

[34] F. A. Pearson, "Principles Involved in Fixing the Price of Milk," *Journal of Farm Economics,* 1:89, 92 (October 1919).

bushel of corn) and demonstrating the stability in its long-time average and its significance for anticipating subsequent changes in hog production. The concept was first published in *Wallaces' Farmer* and later in his book.[35]

The ratio method of price determination was first publicly recognized in the United States by the Food Administration, in November of 1917. A commission of seven swine men had been appointed by the Food Administration to determine the cost of producing hogs, and in submitting their report the commission adopted practically without change the ratio method of price determination as advocated in Wallaces' Farmer during the summer and fall of 1917. The commission, composed of expert swine men from all over the United States, after a careful technical survey of the situation and consideration of the figures submitted by the author, came to the conclusion that the ratio method actually expressed cost of production more simply and accurately than any other method.[36]

Wallace's more detailed statement of price determining forces reads:

Three forces are prominent in making agricultural prices — cost of production, supply and demand, and strategic considerations. Farmers and laborers believe that cost of production should be the chief consideration. Business men preach "supply and demand" as the great price-making force, and in addition use strategic propaganda when it is to their advantange to do so.

Cost of production in the long run is on the average practically identical with both the supply-and-demand price and the actual price. It is in the very nature of things that those producers who can not on the average get cost of production will go out of business. In the case of the hog business, it takes about three years for the average man to get in and out. Ten years, which is fully three times the "in and out" cycle, is "long run" in the hog business. A ten-year average of actual hog prices should therefore be approximately equal to a ten-year average of the cost-of-production price of hogs. As a matter of fact, we find that the cost of production, as shown by the corn-hog ratio, is practically the same from one decade to the next. Decade after decade, the corn-hog ratio has remained constant at eleven to twelve bushels of Chicago corn per hundred pounds of Chicago hog ever since the Civil war. Farm management investigations indicate that for the average farmer this ratio represents approximately cost of production. As a matter of fact, this ratio is "cost of production" in the very truest sense of the term. This ratio represents the reward necessary to keep enough farmers producing hogs to satisfy the consuming demand, year in and year out. . . . At any given time, the cost-of-production price is likely to be decidedly lower or higher than the actual price or the supply-and-demand price. It is only on the average that cost of production becomes identical with the actual price.

Supply-and-demand price departs from the cost-of-production price at any given time because of such things as unusual weather, accidents, etc.

A business panic may come on, as in October of 1907, and as a result the demand for meats of all kinds may shrink. . . . The day-by-day price, however, is as much a matter of psychology as mathematics.

This brings us to a consideration of those more intangible price forces which may be grouped together under the head of strategy. In January and in August of 1919, we had excellent examples of the use of strategy as a price-making force. In both months, certain powerful interests worked in conjunc-

[35] H. A. Wallace, *Agricultural Prices* (Des Moines: Wallace Publishing Company, 1920).
[36] Wallace, *Agricultural Prices,* p. 30.

tion with the newspapers to modify public psychology in the interests of lower prices. Day after day, the lower price bombardment was directed against the farmers by the daily press and the politicians. Prices declined in spite of the fact that the supply was greatly curtailed and the potential demand was as great as ever.

There is a strategy to the timing of a determined price drive. . . . A drive in the fall is partly normal as a result of the increased supply at that time, but oftentimes strategic. In the fall of 1865, following the Civil war, there was a determined price drive, roughly corresponding to the price drive initiated in August of 1919. In both cases, strategic factors were apparently paramount. Certainly, no mathematical formulation of the law of supply and demand could account for the price changes which took place in 1865 and 1919.[37]

In thinking about the price determining forces many questions arose in Wallace's mind which were not fully answered but which commanded his further attention. Wallace stated in 1920:

Prices of corn, hogs, etc., are determined chiefly by supply and demand, together with the occasional influence of strategic manipulation.

The question comes, Would it not be to the public interest if, in price making, more emphasis could be placed on cost of production and less on the short-time working of the law of supply and demand? . . . There is danger that any attempt to make cost of production the guiding factor in price determination will amount to close government supervision of storage, speculation and similar market phenomena. The disadvantages of government supervision are apparent to all who watched the Food Administration at work during the war.[38]

Then again Wallace raises a question and anticipates his ever normal granary idea, which gained great prominence in the 1930's. He asked:

What is the best means of overcoming the food shortage resulting from drouth? . . . Is it practical to build government warehouses to store wheat in years when the acre yield is more than fifteen bushels, and from which wheat may be drawn in years when the yield is less than thirteen bushels?

If we are to continue our present complex society, we must educate our children very thoroly in social mathematics. Our problems are not only problems of the spirit, but also of exact measurement. What is the fair price for bacon? This involves the cost-of-production idea. Is bacon relatively lower or higher than hogs? Are hogs relatively lower or higher than corn? Is there a normal supply in the country? If bacon were lower in price, would the future supply be imperiled?

Possibly it will be wise for the government to provide funds to finance a Price Publicity Committee, to be made up of economists appointed by our state universities and agricultural colleges. The duty of this commission would be to make public week by week the relevant price facts. They would point out which products are relatively high and which are relatively low, and issue index numbers of various kinds, in an endeavor to educate the public to fundamental price facts. The object of such a Price Publicity Committee will be to furnish such constant publicity that it will be difficult for any product to sell for any length of time either above or below cost of production. And in saying this we define cost-of-production price as that price

[37] Wallace, *Agricultural Prices*, pp. 11–13.
[38] Wallace, *Agricultural Prices*, pp. 15, 16.

which is necessary in the long run to keep enough producers in the business to satisfy the demand. It is believed that adequate publicity will favor the prevailing of the long run cost-of-production price as opposed to the short run supply-and-demand price.[39]

Then again Wallace said:

Of course, the law of supply and demand never has been repealed, and never will be repealed. Instead of trying to repeal it, we should try to secure the best type of price-fixing machinery thru which this law may work.

. . . arbitrary interference with this law invariably brings penalties in the form of conditions which often are more severe than the condition which it was hoped to improve.

What we should strive for rather is a better understanding of the law of supply and demand, in the hope that we may be able to modify the severity of its operation and thus avoid periods of feast and famine, with their unreasonably low prices and unreasonably high prices.

Wallace's faith in mathematics as a tool to be used in studying prices is indicated as follows:

It is wise to measure prices to some extent by purely mathematical considerations, in order that we may perceive more clearly when extraordinary forces are at work. After having arrived at a price based on a mathematical interpretation of supply and demand, the problem is to determine to what extent extraordinary forces are at work and to what extent it may be worth while to combat them by extraordinary measures. . . . Will it be advisable to put out newspaper propaganda showing the public how the market price of corn is below cost of production, or put on an advertising campaign to increase the demand? These matters of larger policy are mostly outside the field of mathematics. They are largely matters of strategy.

Generally speaking, a farmers' drive for higher prices would best begin about January 1st, and should reach its greatest intensity about March 1st. After March 1st, seasonal scarcity begins, and no further propaganda is needed.

To have even a fair chance of success in an effort of this sort, farmers must set up a very strong statistical organization, in charge of a highly competent staff of thoroly trustworthy experts.[40]

Much was done in the 1920's in the Bureau of Agricultural Economics to provide the kind of statistical analysis that Wallace had in mind.

Government Price Fixing

The government's war efforts at price fixing continued to influence the thinking of farmers after the war. Of that period H. C. Taylor wrote in 1925:

At the time when I took charge of the Office of Farm Management [1919], an insistent demand was coming in from various parts of the country for specific figures showing the cost of producing cotton, wheat, corn, hogs and cattle. The war period, with its price control on farm products, had left a state of mind which had to be reckoned with. I had scarcely taken office when a telegram, addressed to the Secretary of Agriculture, asked that the Department

[39] Wallace, *Agricultural Prices*, pp. 17–18.
[40] Wallace, *Agricultural Prices*, pp. 20, 21, 22.

issue a statement that the cost of producing a pound of cotton was 29 cents. It was believed that prices should equal cost of production, plus a reasonable profit. Just how costs and prices were to be made to coincide was not made clear, but there seemed to be a belief that if costs were known there would be a way to make prices correspond.

The period of the First World War was one when old theories were thrown aside quickly if a dominant desire was in conflict with a theory. Thus it happened that price fixing was indulged in by Uncle Sam with a fairly free hand and with full regard to the object to be attained. In the industrial field, where the time involved in production was short, "cost plus" became the basis of contracts and while costs rose rapidly the stimulus to production was effective. In the field of agricultural products, the main method of increasing prduction was an appeal to the farmer's patriotism. Price fixing in the case of wheat became a means of holding the price down and forcing the use of substitutes. In the case of pork it became at one time a matter of agreeing to pay a ratio price based upon the price of corn and then failing to make good after the stimulus had been given to production.

The price fixing experiments of the war period, fortunately, threw some light on the question of the relation of cost of production and price. Some economists had looked upon cost as if it were a definite uniform thing in all factories producing the same kind of product and on all farms producing the same kinds of grain, livestock, or other materials. Others accepted Francis A. Walker's theory of differences in efficiency of managers as a cause of variations in costs and profits. The figures gathered showed a great variety of costs. To some this result led to confusion of thought, but to students who had been thinking in terms of marginal cost as the price determinant, variable costs were just what was to be expected. By marginal cost was meant the production cost to the least efficient producer who was needed to supply the market.

When the cost figures were lined up, however, it became obvious that if the prices were fixed upon the basis of cost to those who were producing at the greatest cost, the price would be very high — high enough to stimulate too much production. Under actual conditions there are usually many men who are producing at a loss — certainly in any given year. Hence the marginal cost as determined by cost accounting could not be used as a basis of price fixing. The average cost was considered and found wanting. It would not stimulate production because the average cost would leave too large a percentage of the producers in the losing class.

Finally, the "bulk line" theory was developed which was expounded by Professor F. W. Taussig and used by the price fixing experts in Washington. This was really a cut-and-try method of fixing the price at a point which would stimulate adequate production. As such it had merit, but it took on such definite statistical form in some cases as to obscure the fact that the "bulk line" theory could only point out in a general way that in fixing prices the price does not have to equal the cost to those producers who produce at highest cost. Long before that point is reached the stimulus to the more efficient producers is adequate to bring out the needed supply.

Joint costs were even more confusing than variable costs and made it all the more difficult to apply the "bulk line" theory, where several commodities were produced under one management with many elements of their costs in common.

In agriculture joint costs are the rule. In the Corn Belt, for example, corn, oats, and hay are grown in rotation. The oats furnish the nurse crop for the clover and the clover fertilizes the land for the corn. But this is not the most important sense in which the costs are blended. The same laborers, the same horses, and in part the same machinery are used on these crops. This

is possible and desirable because different crops demand attention at a different time of year.

Under these conditions of production, how is one to determine the cost of each farm product? One can allot costs on a pro rata basis and make arbitrary adjustments with regard to the mutual benefits derived from the rotation. But such adjustments are futile, for, while the oats contribute to the clover and the clover to the corn, the cultivation of the corn prepares the land for the small grain crop, as well as does the special fallow which is charged entirely to the small grain crop in some countries where tillage crops are not available. The thing that can be done is to ascertain the total cost and determine whether the combined prices of the products at a given time will cover the combined cost and continue to stimulate production. If prices are not stimulating, some study will doubtless indicate the amount of increase in price which will be necessary to call forth an increased supply when it is desired.[41]

J. I. Falconer of Ohio

In 1923 the Ohio Agricultural Experiment Station issued a bulletin by J. I. Falconer, the purpose of which was "to set forth some of the leading factors . . . which have to do with price changes and relationships. A first step in the study of the market is to get a clear notion of the various causes which tend to raise or lower prices."[42] Falconer's philosophy of price is indicated by these remarks:

> . . . It has been said that to insure a supply, it will be necessary, normally, to pay a price sufficient to cover the cost of producing 75 to 90 percent of the supply coming upon the market. Because of the wide variation in cost as shown by the different producers this price would be sufficient to return a substantial profit to the most efficient producers, a fair profit to others, while the least efficient would lose or receive but a small return on their capital and labor. Once a particular crop is produced, however, the price which will be received for it will depend not upon the cost of its production but upon the available supply and effective demand. Storage, transportation, and credit facilities all will have their influence upon the quantity reaching the market. An efficient marketing system will be more immediately effective in securing the best possible price than will a knowledge of the cost of production. The public will pay as little as it can or as much as it is forced to pay, according to the condition of the market.
>
> It is difficult to determine the exact cost of producing farm products. In the first place there are so many items of joint cost in the farming business that even the best cost figures that may be secured will involve many estimates. In figuring the cost of producing oats in a rotation of corn, oats, and clover, for instance, the following questions and many others must be decided before the cost can be determined: Shall any of the cost of plowing the land for corn be charged to the oats? Shall the oat crop be credited for serving as a nurse crop for clover? What charge shall be made for fertility? At what rate shall horse-labor be charged? What amount should be charged to the oat crop for the use of machinery? How much overhead expense shall be charged? Again, when the cost has been computed as closely as possible for a number of farms, there will be found a wide variation in the total costs on the differ-

[41] H. C. Taylor, "A Farm Economist in Washington, 1919–1925," (unpublished manuscript, 1925), pp. 85–89.

[42] J. I. Falconer, "Prices of Ohio Farm Products," Ohio Agr. Exp. Sta. *Bulletin* 365 (Wooster, 1923), p. 101.

ent farms, and there will still be the question of what is the relation between cost and price. . . .

. . . Cost figures, however, are useful to the farmer. By knowing his costs the farmer will be better able to reduce them, or to eliminate those enterprises which are unprofitable. Supply will thus be more quickly brought into adjustment with the demand and uneconomical production eliminated.[43]

Falconer then discussed price cycles:

. . . Before changing a farming system because of a change in relative prices one should satisfy himself that the price changes are permanent. Ordinarily it is foolish to shift the type of farming because of temporary changes in the relative prices of products. . . .

. . . Experience seems to show that the prices of those farm products the supply of which cannot be readily increased at short notice tend to move in cycles. This is true of livestock and fruit. . . . With hogs, the supply of which may be increased in a comparatively short time, the price cycles are comparatively short, usually extending over five to six years. Three years is about the length of time which it takes to raise a brood sow and get a litter of hogs ready for the market. It takes longer to increase the supply of horses to meet an increased demand, consequently the cycles are spread over a longer period. Before embarking upon any new enterprise it would be well for the farmer to study the past course of supply and prices and to form an opinion as to whether prices are in the trough or on the crest of a price wave.[44]

E. C. Young and O. A. Day of Indiana

E. C. Young and O. A. Day, of Indiana, made a study of prices as a guide to agricultural adjustment and farm management planning applied to commodities in general. The general principles were stated:

Price is the guiding influence in production. Through the agency of price the consumer lets his desires for products be known to the producer. If more of a product is wanted by consumers, they bid against each other to determine to whom the present supply of the product will go. The producer observes the higher price which results and increases his production in the hope of profit. In the last analysis it is the consumer, and not the farmer, who determines what and how much shall be produced. Prices are simply the agency for registering the will of the public; for stating the demands of consumers with such precision that producers may produce the goods wanted. Every dollar of income which a man receives during a year entitles him to one "vote" on the question of what shall be produced.

It is difficult to see how the orderly production and distribution of goods could take place in our present complicated social system without the control exercised through price. . . .

While production is controlled through the machinery of price, the machine does not always function perfectly, with the result that individuals may be misguided in their production plans by price.

In the production of farm products considerable time must elapse between the time when production begins and the time when the product is finally ready for the consumer. With common farm crops production must be started from six months to a year before the product is ready for consumption. With hogs, beef cattle, apples, and horses, much longer periods must elapse after production is started before consumption can take place.

[43] Falconer, "Prices of Ohio Farm Products," pp. 114, 115, 116.
[44] Falconer, "Prices of Ohio Farm Products," pp. 117–18.

Because of this necessary lapse of time between the starting and completion of production the prices of many kinds of products rise and fall in a more or less rhythmical fashion. The length of the period of rising prices is determined by the time required by producers to get increased production. The length of the period of falling prices is determined by the time required to bring about the necessary restriction of production. . . .

A better understanding of the nature of price movements by a large number of farmers should result in greater stabilization in farming with a consequent saving to all concerned. The stabilization of prices can probably be best accomplished by having a large number of producers familiar with all the factors governing price determination. This large body of producers, each one of whom is acting in his own selfish interest, will bring about increased price stability. What stability or lack of stability we now have in prices is in a very real sense a reflection of the composite intelligent action of the producers engaged in the production of the product.

There are, however, many price-making factors, such as weather, which can not be foreseen or controlled which will make the prices of some products highly unstable no matter how much producers study the situation.[45]

Prices of many farm products move in definite cycles. Livestock cycles are mostly quite regular in their recurrence, but crop prices show little regularity in their movements. Weather is the dominant influence in determining crop production and price.[46]

The authors recommended the study of price cycles as a means of providing the basis for more intelligent action on the part of farmers in adjusting supply to demand. They took the position that a study of price cycles in the light of historical and geographical conditions, both in agriculture and in other occupations, forms an important background in terms of which to appraise current facts and forecasts relating to supply and demand.

G. S. Shepherd of Iowa State College

Prices and the time to sell grain were studied at Iowa State College. The first of G. S. Shepherd's reports from the college had to do with the time to sell corn.[47] The study of the cost of holding grain took into consideration shrinkage, interest, insurance, and destruction by vermin. The author set these costs against the advance in price and concluded:

On the average, the price of corn rises from winter to summer more than enough to cover this cost.

After big crops, the price of corn usually rises more than it does after small crops. After small crops, the price of corn may not rise enough to cover the cost of storing.

It is advisable, then, to store corn after a big or average crop, but not after a crop 95 percent of average size, or smaller. This rule worked 21 times out of the last 23 years.[48]

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[45] E. C. Young and O. A. Day, "Prices of Farm Products in Indiana," Purdue University Agr. Exp. Sta. *Bulletin* 320 (Lafayette, 1928), pp. 3, 4, 5.

[46] Young and Day, "Prices of Farm Products in Indiana," p. 2.

[47] G. S. Shepherd, "When Shall We Sell Our Corn?" Iowa Agr. Exp. Sta. *Circular* 113 (Ames, 1929).

[48] Shepherd, "When Shall We Sell Our Corn," p. 2.

Another circular prepared by Shepherd in 1929 related to the question of orderly marketing vs. "dumping."[49] The study showed that farmers with other sources of income were holding their corn for summer prices more generally than was true in the cash grain areas. The general conclusion was:

> . . . the more important cash corn is as a source of income, the more likely is it to be sold when the owner needs the money in the winter, regardless of the price outlook.
>
> Oats are dumped on the market heavily at harvest time all over the state. But this does not involve much loss, since the price of oats is more stable than the price of corn and on the average rises after harvest little more than enough to cover the costs of storage.[50]

Shepherd's interest in the theory of prices led him to publish the results of some of his thinking in the *Journal of Farm Economics.* In an article published in 1932, Shepherd discussed the question of who carries the burden of increased costs of distribution. Shepherd's statement of the question, and his answer, are quoted:

> When costs of distribution increase, as for instance when freight rates are raised, who pays the bill? Does the producer receive less, or does the consumer pay more? And if they divide the burden between them, what determines how much of the load will be borne by the producer, and how much by the consumer?
>
> The answer to this group of questions consists of two parts, for the division of the burden of increased costs of distribution between producer and consumer depends upon two sets of conditions. It depends . . . upon the elasticity of the demand and of the supply. And second, it depends . . . upon the shiftability of the demand and of the supply. . . .
>
> When other things remain equal, for example, when the costs of distribution of hogs increase but the costs of distribution of other farm products remain unchanged, the derived demand curve for hogs shifts downward and the price of hogs in Iowa is depressed. The prices of other products, however, remain unchanged. Farmers therefore raise fewer hogs and more of alternative products; the production of hogs is reduced. . . .
>
> But when other things do not remain equal; when the costs of distribution of other agricultural products increase, as well as the costs of distribution of hogs, the situation is different. Suppose that a general freight rate increase goes in effect, for example, or that a decline in the general price level takes place and wage rates remain high while agricultural prices decline. Then . . . farmers do not shift from hog production in other lines, because the prices of alternative products have declined as much as hog prices have . . . farmers do not decrease their hog production as they do when other things remain equal. . . . They reduce their supply prices . . . instead of reducing their production.
>
> . . . The situation is simple enough when the demand for hogs[51] and other products is increasing, in response, let us say, to growth in human population, increase in per capita purchasing power, or a reduction in the costs

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[49] G. S. Shepherd, "Does Iowa 'Dump' Its Grain?" Iowa Agr. Exp. Sta. *Circular* 118 (Ames, 1929).

[50] Shepherd, "Does Iowa 'Dump' Its Grain?" p. 4.

[51] The reader should mentally insert "and other products" after the word "hogs" wherever it appears in this section, since we are dealing here with changes affecting other products as well as hogs.

of distribution. . . . The price of hogs rises, and hog production goes up. These things take place without much friction. Agricultural production expands easily. . . .

But when the demand for hogs decreases, the situation is different. Farmers do not decrease their production of hogs as readily as they formerly increased it. Their investment has been made, their plant is a going concern; it cannot be shut down without loss of the time and money invested. Most of the labor is supplied by the farmer and his family, and they cannot be discharged. They take a lower return than they anticipated, rather than take no return at all. They continue to produce, but at lower prices than before. . . .

A situation of this sort did not have serious long-time effects while the population of the United States was expanding rapidly, as it was before the World War [I] (1914–1918). The steady increase in population kept the demand curve steadily moving to the right, and before many years had passed the demand increased enough so that the situation gradually righted itself. . . .

But the situation now is different. Immigration restrictions and declining birth rates have very greatly reduced our rate of population growth. . . .

. . . the total demand for agricultural products is increasing at a very much slower pace now than before the War. . . . Agriculture is losing a large part of its powers of recuperation. The burden of increased costs of distribution (mostly the result of higher freight rates and higher labor wage scales) or of a business depression, or of a falling general price level, falls chiefly on the producer now the same as it did before the War. But whereas a generation or two ago the steady increase in the demand for agricultural products helped him to roll the burden off with the passage of time, nowadays the load settles on his shoulders more permanently; he must struggle with it unaided until such time as the property is passed on to a new owner on a new value basis.[52]

Bureau of Agricultural Economics Price Studies

Three bulletins,[53] prepared in the Bureau of Agricultural Economics, related to market prices and price trends in their relation to agricultural production. They covered oats, hogs, and cotton. The effort in each was to describe the way in which supply and demand fluctuate and point out the factors to keep in mind in trying to adjust production with a view to maximum profits for the farmer. The summary of the bulletin on hog prices:

The 5,000,000 hog producers of this country use hog prices as an indication of when to increase their production and when to decrease, just as producers of all other commodities sold on a competitive market use prices as a guide to their operations.

Though all producers consciously or unconsciously take price into consideration the decisions they reach vary with the individual. Farmers may be grouped roughly into three classes in this regard: (1) Those who expand production when prices are favorable and contract when prices are unfavorable; (2) those who look beyond the current prices to the future, and hence gen-

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[52] G. S. Shepherd, "The Burden of Increased Costs of Distribution," *Journal of Farm Economics,* 14:650, 656–58, 660–61 (October 1932).

[53] H. B. Killough, "What Makes the Price of Oats," U.S.D.A., *Department Bulletin* 1351 (Washington, 1925).

G. C. Haas and M. J. B. Ezekiel, "Factors Affecting the Price of Hogs," U.S.D.A., *Department Bulletin* 1440 (Washington, 1926).

A. B. Cox, "Cotton Prices and Markets," U.S.D.A., *Department Bulletin* 1444 (Washington, 1926).

erally do just the reverse; and (3) those who keep practically uniform production regardless of price.[54]

Three other bulletins on prices relate to the futures market for wheat and corn.[55] Farmers have long believed that transactions on the futures markets were detrimental to them. Bulletins by J. W. T. Duvel and his staff gave evidence that farmers were, at least in some measure, right:

> . . . It is evident that large trading operations obviously designed to influence prices, and especially operations which involve heavy swings at frequent intervals from one side of the market to the other have neither economic nor moral justification. It seems equally true that a futures market in which an individual trader may buy or sell within a single trading day a quantity equivalent to 10 or 12 per cent of the total trading for the day in the dominant future is not a market based on the supply of or the demand for actual grain.[56]

A year and a half later the results of those studies of wheat futures were summed up:

> The results of this study and the results of the two detailed investigations preceding it lead to the conclusion that without the accumulation of long or short "lines" of millions of bushels by a very few leading speculators, the major swings in price would not have been so large. Particularly pronounced is the relation of price to the market position of the leading speculators on days on which net purchases or sales of large proportions occurred. It is by no means a coincidence that the price and net trade moved in the same direction on 24 out of 28 of these individual days on which the net trading of the five leading speculators aggregated 2,000,000 bushels or more.
>
> In the two previous studies relating to the trading operations of the leading speculators it was suggested that some limitation should be placed on the quantity of futures, either long or short, that a single trader may be permitted to acquire, together with a limitation on the quantity that a single trader may buy or sell in one trading day for purely speculative purposes. This suggestion is again made. Preferably such a rule should be established and enforced by the exchanges themselves. Were this done, it is believed a greater degree of price stability would be attained. Price movements up or down would be more gradual and to a larger extent more in response to fundamental supply and demand factors. This is desirable both for the farmer and for the grain trade generally.[57]

A study was made of corn futures in the Chicago market which handled 92 per cent of the total volume. Future trading in corn was second in importance only to wheat:

> Corn-futures contracts are rights to corn. If either the buyer or the seller

[54] Haas and Ezekiel, "Factors Affecting the Price of Hogs," pp. 1–2.

[55] J. W. T. Duvel and G. W. Hoffman, "Speculative Transactions in the 1926 May Wheat Future," U.S.D.A., *Department Bulletin* 1479 (Washington, 1927).
J. W. T. Duvel and G. W. Hoffman, "Major Transactions in the 1926 December Wheat Future," U.S.D.A., *Technical Bulletin* 79 (Washington, 1928).
G. W. Hoffman, "Trading in Corn Futures," U.S.D.A., *Technical Bulletin* 199 (Washington, 1930).
See also, U. S. Grain Futures Administration, "Fluctuations in Wheat Futures," 69th Congress, 1st Session, *Senate Document* 135 (Washington, 1926).

[56] Duvel and Hoffman, "Speculative Transactions in the 1926 May Wheat Future," *Department Bulletin* 1479, p. 43.

[57] J. W. T. Duvel and G. W. Hoffman, "Major Transactions in the 1926 December Wheat Future," *Technical Bulletin* 79, p. 36.

of a future chooses, he can under normal conditions compel fulfillment by actual delivery of corn. While it is true that not more than 0.5 per cent of the total volume of corn futures actually matures by ultimate delivery, this right to require such fulfillment closely links together futures prices and cash prices. This gives to future trading a commanding importance in relation to the price of corn both at terminal and country markets. . . .

The annual level of corn prices as well as corn-futures prices is determined mainly by the size and quality of the crop, by the demand for corn and by the general level of prices for all commodities. These factors account for broad changes in the level of prices from one crop year to another. Future trading is related to these general changes in price by being stimulated by them and by an anticipation of them. Trading, in turn, frequently is built up to an extent that prices are carried beyond the point to which they would otherwise have gone only to react later, by the same trading inertia, to abnormal levels in the opposite direction.

While the annual level of prices is determined by broad crop and marketing factors, smaller fluctuations in price occurring from day to day and from week to week are frequently affected purely by trading activity. Here again, however, it is impossible to separate in each instance cause and effect, price at times reacting strongly to trading activity and the latter, in turn, being stimulated by unusual market changes. . . .

. . . The present study does not show, however, as pronounced a degree of relationship between the course of prices and the trading operations of the outstanding speculators as did those in wheat futures. One reason for this was the lack of speculative interest in corn futures during the years 1925 and 1926, years when trading in wheat futures were far more attractive than in corn futures and during which the trading operations of the market leaders in wheat futures were on a very large scale.[58]

Thus the price studies made by the U. S. Department of Agriculture indicated that on given days future trading may be a factor in determining the price of wheat or corn, but that the longer period price level is determined by forces and conditions which determine the supply and the demand.

In spite of all criticism, future trading came to be recognized as serving a legitimate purpose. Its primary function is to provide a means of hedging, i. e., taking out insurance against having to pay prices above a given level for wheat with which to make flour to fill contracts made for future delivery to jobbers or wholesalers of flour. At the same time, the belief was confirmed that future trading gave opportunity for abuses. The function of government regulation of future trading is to curb the actions of those who would abuse the privilege of trading in futures by excessive buying or selling in a manner to force the price of futures out of line with the supply and demand prices.

Purchasing Power of Farm Products

During the 1920's the farmer's interest in prices became more and more an interest in the purchasing power of farm products rather than just in current dollar prices for the things he had to sell. In

[58] G. W. Hoffman, "Trading in Corn Futures," *Technical Bulletin* 199, pp. 37, 38, 39.

the early 1920's, prices the farmer received for his farm products had fallen much more than the prices he had to pay for the things he bought. It became evident to him that farm products at free competitive prices could not be exchanged for an adequate supply of the products he required from other producers. Not prices but price ratios then became the issue. In the 1920's, when farm organizations and the farm bloc[59] in Congress became interested in maintaining the purchasing power of farm products on the prewar level, the U. S. Department of Agriculture enlarged the list of goods for which consumer prices were collected. Statements showing the purchasing power of farm products were issued by the U. S. Department of Agriculture each month in the *Agricultural Situation* beginning July 1, 1922. The price index numbers were based upon the average prices for the five years, August, 1909 to July, 1914.[60] The trends and price ratios have been summarized:

> . . . From 1910 to 1915, both the index numbers of farm prices and of nonagricultural prices fluctuated around the [1909–1914] base level, or 100. The same was true of the index numbers of purchasing power. Then both the index number of farm prices and that of nonagricultural prices began to rise. During 1916 and most of 1917, nonagricultural prices went up faster than farm prices, which reduced the index number of purchasing power of farm products below 100. Then, for about two years from the latter part of 1917 to the latter part of 1919, the situation was reversed. The index of farm prices overtook and passed above that of nonagricultural prices, which immediately brought the index number of purchasing power of farm products above 100. The highest point reached during the period was 117 in May, 1919. Then nonagricultural prices again began to go up faster than agricultural prices, which made the index number of purchasing power of farm products fall.
>
> When the break came in the early part of 1920, farm prices fell much faster than nonagricultural prices. This caused the index number of purchasing power of farm products to fall to still lower levels. The lowest point was reached in 1921, when the index number of purchasing power of farm products reached 66 in May of that year. Then there was a gradual recovery for about a year, which was again followed by a drop in the index number of purchasing power of farm products to 66 in August of 1922. During the next three years, that is, from the latter part of 1922 until the latter part of 1925, the index of purchasing power of farm products improved, reaching 93 in August, 1925. . . . After that date, the index number of purchasing power of farm products took a downward trend, reaching the low point of 80 in November, 1926. . . . In January, 1927, the index number of purchasing power of farm products was 81. This was 13 per cent lower than in August, 1925, and 19 per cent below the prewar level.[61]

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[59] The farm bloc consisted of a group of Congressmen interested especially in the welfare of the farmer, and who acted together regardless of party affiliations. For a history of the farm bloc, see A. Capper, *The Agricultural Bloc* (New York: Harcourt, Brace & Co., 1922).

[60] The question may be asked, Why were the price level and price ratios of 1909–1914 taken as a base? Was it assumed that the price ratios of that period were just and fair both for the farmer and the city worker? No. That basis of comparison was taken because the facts were available and no other basis of comparison — such as incomes and living costs of those in various occupations — was possible due to lack of data. The 1909–1914 basis of comparison seemed useful in the 1920's because the attainment of that goal would have been a very great improvement over the current situation.

[61] H. C. Taylor and J. Perlman, "The Share of Agriculture in the National Income," *The Journal of Land and Public Utility Economics*, 3:149–51 (May 1927).

Share of Agriculture in the National Income

Changes in price ratios unfavorable to farmers means that farmers are not able to buy their accustomed quantities of goods and services produced by people engaged in other occupations. It means that the share received by agriculture in the national income is reduced. The starting point in calculating the share of agriculture in the national income is the net income of agriculture. Figures on the national income and the share received by agriculture were published in 1927:

> The figures for the value of farm products in current dollars provide a basis for computing the gross income of agriculture. From the total value of crops not fed and animal products sold or consumed were subtracted estimates of the value of crops used for seed or wasted. To the remainder was added the estimated pure rental value of farm dwellings. The sum is the gross income of agriculture. From this gross income were deducted estimates of business expenses and taxes. The remainder is the estimated net income of agriculture. . . .
>
> In 1909, the net income of agriculture in current dollars amounted to $5,578,000,000. Then it gradually rose until 1915, when it amounted to $7,153,000,000. After 1915, its rise was very rapid, the net income in current dollars having reached the highest point in 1919, when it amounted to $13,980,000,000. During the next two years it declined. In 1921 it was $6,696,000,000. After that date it went up gradually, and the net income figure for 1925 was $8,839,000,000.
>
> The net income in terms of 1913 dollars was obtained by dividing the net income in current dollars by the index numbers of cost of living. Until 1915, the net income in terms of 1913 dollars remained more or less stationary. Then it began to go up and reached the highest point for the entire period in 1917, when it amounted to $8,041,000,000. Then it began to drop, first gradually and then very rapidly, until it reached the bottom in 1921, when the net income in terms of 1913 dollars amounted to only $3,777,000,000. Since then it has been going up gradually and in 1925 amounted to $5,095,000,000.
>
> To compute the share of agriculture in the total national income each year from 1909 to 1925, the net income of agriculture was divided by the total "current income" of the people of the United States, as computed by W. I. King of the National Bureau of Economic Research.[62] The result gives the percentages of the total "current income" received by agriculture for each year. . . .
>
> A glance at Table VII . . . will bring out clearly the economic condition of agriculture as compared with that of all other occupations by years from 1909 to 1925. Prior to 1917, the share of agriculture in the total "current income" remained relatively stable. The percentages received by agriculture fluctuated between 20 per cent and 22 per cent. This indicates that the rate of increase in the net income of agriculture was keeping pace with that in other occupations. During the years 1917 and 1918, the rate of increase in the net income of agriculture was greater than in other industries. As a result, the share of agriculture in the total "current income" of the nation increased to 24 per cent. This advantage, however, disappeared in 1919, when the total "current income" increased considerably, while the net income of agriculture rose only slightly, thus reducing the percentage share of agriculture to 21.

[62] National Bureau of Economic Research, *News Bulletin* (Feb. 21, 1927), p. 2. The figures for the period from 1922 to 1925 are preliminary.

During 1920, while the total "current income" increased, the net income of agriculture dropped more than three billions. The result was that the share of agriculture fell to 14 per cent of the total "current income" of the people of the United States. In 1921, the total "current income" showed an enormous drop, but the drop in the net income of agriculture was relatively greater, and as a result the share of agriculture fell below 11 per cent. During the years from 1921 to 1924, the total "current income" increased rapidly, but the share of agriculture remained about stationary at the level of 1921.

TABLE VII.

Share of Agriculture in Total "Current Income" of People of United States, by Years, 1909–1925

A	*B*	*C*	*D*
Calendar year	Total "current income" of people of United States*	Net income of agriculture	Percentages of total "current income" of people of United States received by agriculture C ÷ B
	millions	*millions*	
1909	27,100	5,578	20.6
1910	28,400	6,155	21.7
1911	29,000	5,856	20.2
1912	30,600	6,317	20.6
1913	32,000	6,603	20.6
1914	31,600	6,771	21.4
1915	32,700	7,153	21.9
1916	39,200	8,491	21.7
1917	48,500	11,451	23.6
1918	56,000	13,386	23.9
1919	67,254	13,980	20.8
1920	74,158	10,549	14.2
1921	62,736	6,696	10.7
1922	65,567	6,976	10.6
1923	76,769	8,070	10.5
1924	79,365	8,390	10.6
1925	86,461	8,839	10.2

* Estimates of W. I. King of National Bureau of Economic Research in *Ibid.*

In 1925, the total "current income" increased relatively more than the net income of agriculture, thus reducing the share of agriculture to about 10 per cent.

In 1925, the share of agriculture in the total "current income" of the people of the United States was less than one-half of what it was before the war. A part of this reduction may be explained by the relative and absolute decrease in farm population, but, if allowance is made for this reduction, the most conservative estimate of the share agriculture should have received in 1925, in order to be on a parity with the prewar period, is not less than 15 per cent of the total, or 50 per cent greater than it actually was in that year.

It should be pointed out that while the percentage share of agriculture in the total "current income" of the nation shrank to one-half of what it was

before the war, the share received by farmers probably shrank even more, because of an increase in the rent and interest paid by farmers to nonfarmers.[63]

The Struggle for Price Supports

The distress of the farmers in the 1920's, at a time when those in city occupations were as a rule amazingly prosperous, caused more and more people to become skeptical of the view that, with full information for all, the supply-demand-equilibrium price would be a fair price for farm products — a view which had held sway for 80 odd years in official circles in the United States. On the other hand, the belief rapidly gained ground that competition in other occupations, the occupations which produced the things farmers buy, was being limited in many ways, which resulted in the maintenance of prices on an artificial level above what they would reach if competition were as keen in other occupations as in agriculture. It was still believed that competitive prices would be fair prices under equally free competition. By fair prices was meant prices which would enable farmers to live as well as those in other occupations requiring comparable knowledge, skill, and energy.

One line of attack on the problem then considered was to free industrial and commercial competition from the restrictive elements which enhanced prices. Another proposal was to provide the farmer with the means of equally limiting competition with a view to obtaining prices which would yield the farmers a fair share of the national income. No support could be gotten for the former idea. But labor was ready to support the latter approach as being in harmony with its methods. That situation gave rise to the farmer movement for "parity prices" for farm products through limitation of competition of farmer with farmer. The McNary-Haugen movement for "equality for agriculture," the debenture plan, and the movement to create centralized co-operatives with the hope of controlling prices, were three major efforts to find a solution of the farmer's price problem. Coolidge blocked all forms of federal price supports. Hoover limited his action to helping finance the co-operatives in their unsuccessful efforts to control prices without production controls. The farmers' price problem was left for the "New Deal" administration in 1933. The story of the radical change in national policy in the 1930's as it related to prices of farm products would carry us far beyond the limits set for this volume.

[63] H. C. Taylor and J. Perlman, "The Share of Agriculture in the National Income," pp. 153–56.

19.

Government Marketing Activities, 1893-1920

PRIOR TO THE ORGANIZATION of the Office of Markets by David F. Houston in 1913,[1] the U. S. Department of Agriculture had given considerable attention to the marketing of farm products. Crop estimating work, as has been noted, provided the farmer information helpful in marketing his products. Statistics of exports of agricultural products had been included in the annual reports of the U. S. Department of Agriculture commencing with 1862. With the growth of burdensome agricultural surpluses, particularly in the 1880's and the 1890's, attention was directed to finding the means of expanding the markets abroad for these surpluses. While certain farm organizations were seeking a remedy in cheaper money, and David Lubin was advocating a subsidy for agricultural exports as a means of raising prices in the home market, the Department of Agriculture was seeking ways of enlarging the foreign demand.

U. S. Department of Agriculture, 1893–1903

On February 7, 1893, just prior to his retirement on March 20, J. R. Dodge submitted to J. M. Rusk, the Secretary of Agriculture, the manuscript of a 200-page bulletin on the production and distribution of the principal agricultural products of the world.[2] That bulletin was the product of many years of effort. The data related primarily to the decade 1881–90. Dodge's interest in statistics related at all times to marketing as well as to production, to world statistics as well as to national statistics. The definitiveness of his mental picture of world markets for farm products is illustrated by his discussion of the world market for wheat:

The wheat "market of the world," which is open for the surplus production of producing countries is circumscribed and very small when the

[1] See U.S.D.A., *Annual Report,* 1914 (Washington, 1914), p. 317. (Charles J. Brand was appointed the first Chief on May 16, 1913.)

[2] "Production and Distribution of the Principal Agricultural Products of the World," U.S.D.A., Division of Statistics, *Misc. Ser. Report* No. 5 (Washington, 1893).

general use of wheat as a bread grain is considered. Practically it is all in Europe, and even there limited to the necessities of a few countries. Insular and factory-studded Great Britain, with its small area and its teeming population, and populous little Belgium practically furnish the market for which the wheat-growers of the world are striving in competition. Excluding these two countries Europe is practically self-supporting, the excess in the eastern countries being sufficient to meet the deficiencies in the western nations. To supply the small amount required to meet the European deficiency the fields of America, India, and Australasia are principally relied upon, and the sharp competition between the agriculturists of the rivals for the possession of this "world's market" results in furnishing a cheap food supply for the artisans of the manufacturing nations.[3]

A somewhat similar presentation of world market demands was made for the other cereals, tobacco, cotton, and wool. The subject of production and distribution was dealt with by countries, as well as by commodities. In discussing the United Kingdom, Dodge said:

The production of wheat in the United Kingdom shows a comparatively steady decline. . . . While a reduction in the amount of home-grown wheat has been made from year to year the amount of foreign wheat imported has grown larger . . . an increase of a little less than 20 per cent in twelve years. . . .

Indian corn is not grown in the United Kingdom. Demand exists for it mainly for consumption by work animals, which requires an annual import of more than 60,000,000 bushels. The people of Europe as a rule do not appreciate the advantages of this grain as a human food, and heretofore the shipments from this country have been mainly controlled by conditions existing at home. When the surplus was large and prices low, Great Britain and some continental countries have taken it because it was cheap enough to use in competition with other animal foods. The effort which is now being made to call the attention of the various countries of Europe to the fact that it is admirably adapted for human consumption may result in a substantial and to-be-desired enlargement in our annual shipments. More than half the imports into the United Kingdom are shipped from the United States. The Danubian countries and the Argentine Republic furnish the larger part of the remainder. . . .

. . . Of the total imports [of tobacco] the United States furnishes probably more than five-sixths, Holland being the only other single country of marked prominence as a source of supply.

The statements relative to dairy products show that the United Kingdom is a very large importing country both in butter and cheese. . . .

The annual wool trade of the United Kingdom is by far greater than that of any other country in the world. . . . [Wool is] drawn from every quarter of the globe and produced under every condition of agriculture, from the intensive and scientific methods of Holland to the nomadic and pastoral conditions of the plains of Asia and pampas of South America.[4]

These excerpts are given to indicate the character of that final product of J. R. Dodge's work in the U. S. Department of Agriculture which, in turn, may be looked upon as the beginning of serious study of world markets for agricultural products by the Department.

[3] "Production and Distribution," p. 12.
[4] "Production and Distribution," pp. 111–13.

In the autumn of the year that Dodge's report was issued, a 24-page report by E. T. Peters was prepared on the same subject.[5]

Under date of November 20, 1894, J. Sterling Morton asserted in his annual report as Secretary of Agriculture:

> There is nothing of greater or more vital importance to the farmers of the United States than the widening of the markets for their products. It is the demand for wheat, the demand for beef, the demand for pork, the demand for all the products of human industry which confers a money value upon them in markets. Therefore, the relation of supply to demand is the creator of prices and the sole regulator of values. Holding such views, the Secretary of Agriculture has carefully studied and enumerated the demands for American agricultural products in the principal markets of the world.[6]

Nearly a fourth of Secretary Morton's annual report for 1894 was devoted to foreign markets. The first circular of the newly created Section of Foreign Markets carried this statement: "The purpose of the Section of Foreign Markets is to furnish information on the world's markets with special reference to their demands for agricultural products."[7] In his final report, 1896, Morton emphasized the importance of economics to the farmer and particularly the facts and figures relative to marketing. In that connection he spoke of the recently created Section of Foreign Markets and its part in extending "our markets beyond the sea."

> Agricultural colleges and experiment stations are teaching the science of agriculture. But they are not generally teaching farm economics and the importance of markets. Science is constantly showing the farmer how to increase the annual product per acre in cereals and other staples, but the great question confronting each tiller of the soil is how to secure satisfactory remuneration for the results of his toil. In view of this, it is a legitimate function of the Department of Agriculture to place before the farmers of the United States as many facts and figures relative to markets as it is possible to obtain.
>
> In furtherance of this design, the Section of Foreign Markets was organized on March 20, 1894, for the purpose of collecting and disseminating information calculated to assist in securing a more extended market abroad for the agricultural products of the United States. The work of the section, with this object in view, is twofold in character. It comprises not only the publication of a regular series of bulletins and circulars, but also the furnishing of information in response to special inquiries. Eight bulletins relating to as many different countries, viz, the United Kingdom of Great Britain and Ireland, the German Empire, France, Canada, Netherlands, Belgium, Norway, and Sweden, have already been issued, and bulletins upon Denmark and Mexico are now in course of preparation. Each country is treated with a view to its possibilities as a customer of the United States.
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> The natural resources of the country are described in some detail, and

[5] E. T. Peters, "Recent Features of Our Foreign Trade," U.S.D.A., Division of Statistics, *Misc. Ser. Report* No. 8 (Washington, 1894).

[6] U.S.D.A., *Yearbook*, 1894 (Washington, 1895), p. 9.

[7] "Peaches and Other Fruits in England," U.S.D.A., Section of Foreign Markets, *Circular* 1 (Washington, 1895), p. [3].

also the character and extent of the leading productive industries, but more especial attention is given to the subject of foreign commerce. A detailed statement of the principal articles of merchandise imported and the various sources from which they are received is presented, together with such information regarding customs duties and regulations, equivalents of foreign weights and measures, rates of exchange, etc., as may be of service to American producers seeking a foreign market for their products. Appended to each bulletin is a series of reports received through the medium of the State Department from our consular representatives abroad. These consular reports are designed to set forth such opportunities as exist for increased trade with the United States, and they frequently contain information of great value to American exporters.

In addition to the bulletins described, the Section of Foreign Markets has thus far issued ten special circulars upon subjects affecting our foreign commerce. The statistical data presented in the bulletins and circulars of the section are derived as far as possible from the official publications of the countries treated, and to render their statistics more readily intelligible, foreign moneys, weights, and measures are converted into their equivalents in the denominations used in the United States.

An important part of the work of the Section of Foreign Markets consists in supplying information in response to the many inquiries that are received relative to the extension of our foreign trade. These inquiries cover a wide range of investigation, and it frequently entails a large amount of labor to supply the information desired. Among the sources of inquiry to which information has been furnished may be mentioned other Departments and offices of the Government, Representatives in Congress, and Congressional committees, boards of trade, chambers of commerce, and other commercial and agricultural organizations, and newspapers and periodicals devoted to agriculture or trade.

The numerous requests for information received by the section and the large demand for its publications serve in a measure to indicate the importance of the work that it is attempting to perform. The rapid development of the agricultural resources of the United States has resulted in an annual production far in excess of the consuming capacity of our population. To such a degree has the surplus increased that its disposal is fast becoming a grave problem. The logical solution lies in the extension of our markets beyond the sea. To accomplish this in the face of the keen competition that other great producing countries are prepared to offer, an accurate and thorough knowledge of the conditions to be met is quite essential. The investigation of these conditions and the diffusion of the information thus acquired comprise the work for which the Section of Foreign Markets was created.[8]

During Secretary Morton's incumbency, bulletins and circulars published by the Section of Foreign Markets did not carry the names of authors, excepting those in the consular service whose materials were quoted. Each bulletin and circular carried the phrase: "Under the immediate supervision of the Secretary of Agriculture."

On January 9, 1897,[9] Morton, anticipating his own retirement on March 4, and no doubt having a concern for the future of the

[8] U.S.D.A., *Yearbook*, 1896 (Washington, 1897), pp. 36–37.
[9] *Yearbook*, 1896, p. 555.

marketing work which he had personally supervised, made Frank H. Hitchcock Chief of the Section of Foreign Markets. Hitchcock held that position until 1903. Morton's successor, James Wilson, also recognized the importance of the foreign market for agricultural surpluses. In his first report Wilson declared:

> The markets of the world are now in close, sympathetic touch. Their sources of supply are affected by the weather, by insect depredations, by military commotions, by transportation facilities, and by the intelligence of producers. The Department of Agriculture intends, through its bureaus, offices, and divisions, to carry information to the home of every farmer, and thus enable him to direct his efforts intelligently as changing conditions suggest.[10]

Wilson's report also included the detailed story of experimental shipments of butter to London. That conclusions drawn from the experiment indicated a willingness to continue the effort to extend the foreign market for perishable commodities is shown in this excerpt:

> Early in the year it became apparent that a considerable surplus of butter of the higher grades would appear in our domestic markets. . . . I therefore decided to make a series of experimental exports of fine American butter, for the purpose of promoting an increased foreign demand for this article, and in order to get more exact information as to facts and conditions attending such exports than was otherwise obtainable. . . .
>
> . . . The butter has been obtained from selected creameries in the leading dairy States, prepared with special reference to the ascertained requirements of foreign buyers, and thus far all has been consigned to a representative of the Department at London. It has been disposed of under his supervision, special efforts being made to test the demands of the London market and obtain the opinions of wholesale dealers, tradesmen, and consumers as to the merits of the butter thus sold and its relative position, present and prospective, in that market.
>
> Much attention has also been given to the matter of transportation, with a view to shortening the time, improving the accommodations, and avoiding detentions and exposures, so as to make the conditions as nearly perfect as possible all along the line, from the producer, perhaps in our far West, to the consumer in England or on the continent of Europe. . . .
>
> The shipments made have served the double purpose of securing useful information for those of our own people, whether producers or dealers, who wish to sell abroad, and of aiding to establish a better reputation for butter from the United States among prospective customers. . . .
>
> It is too early now to formulate all the lessons taught by these experimental exports, but certain facts have been already determined. . . .
>
> . . . The results obtained thus far seem to make it desirable to continue these experimental exports of butter, enlarging the field of operations to include other points in Great Britain which present peculiar local features, as well as selected markets on the continent of Europe.
>
> It may become expedient to make similar efforts to extend the markets for other perishable commodities, the products of American farms, such as poultry, eggs, and fruit.[11]

[10] U.S.D.A., *Yearbook*, 1897 (Washington, 1898), p. 12.
[11] *Yearbook*, 1897, pp. 12–15, 17.

Frank H. Hitchcock, who, as the newly appointed Chief of the Section of Foreign Markets, was working with Secretary Wilson on the problem of sending more agricultural products abroad, said in his first report:

> Agricultural productiveness in the United States far exceeds the consuming capacity of our population. After domestic requirements have been amply supplied there remains each year a vast surplus of farm produce that must either be disposed of abroad or become a burden upon the home market. The slightest excess of supply over demand leads to a depression of prices, and when the excess is large, as frequently happens in this country, there is always danger of a serious decline in values and consequent loss to the producer. In order to prevent the glutting of our own market and its attendant evils, the surplus production of American agriculture must be shipped to other countries. The extension of our export trade in agricultural commodities is therefore a matter of the highest moment to the farming community. For the purpose of aiding in this important object the Department of Agriculture has established the Section of Foreign Markets. . . .
>
> In the earlier stages of our agricultural development we found it comparatively easy to market our farm products abroad. The wonderful agricultural resources of the country, far surpassing those of the older European nations, gave us a ready mastery of the situation. There were no competitors formidable enough to endanger our control of the trade. But the situation to-day is changed. Powerful rivals now confront us in our contest for the world's markets. The fertile grain fields of Russia and of Argentina offer their abundant product to the importing nations of Europe at prices we find it difficult to meet. The marvelous agricultural possibilities of Australasia are becoming more fully recognized as with each succeeding year still larger quantities of produce from that distant country are placed upon the European market. Our neighbor Canada has also made astonishing progress in some directions, and is now one of our most successful competitors in supplying meats and dairy products to the British people. Even the older countries of Europe show in some instances a surprising development in certain lines of agricultural production, as, for instance, the rapidly increasing output of butter in Denmark. From such changes as these a much fiercer struggle among the competing countries has resulted, and if in the face of this stronger competition we are to maintain our supremacy in the world's markets, it will require on the part of our exporters a more determined and persistent effort than has hitherto been necessary. . . .
>
> . . . In this contest for trade the first requisite is a thorough knowledge of the conditions to be met. To assist in supplying such a knowledge is the object of the Section of Foreign Markets.
>
> With this end in view the agricultural resources of foreign countries are carefully investigated. . . . Special attention is given to the character of each country's import trade. The nature, extent, and source of the imported commodities are examined, to ascertain what possibility there is for successful competition on the part of our own producers. . . .
>
> The results of these investigations, supplemented by practical information regarding transportation facilities, customs duties and regulations, equivalents of foreign money, weights and measures, rates of exchange, etc., are given to the public in the form of bulletins and circulars.[12]

Hitchcock, like Dodge, expressed the hope that the price of corn

[12] *Yearbook*, 1897, pp. 270, 271, 273.

might be improved by expanding the use of that cereal as a human food in Europe. On that subject Hitchcock said:

> The movement that has recently been set on foot by American producers to extend the use of our Indian corn, or maize, in foreign countries is also receiving the active cooperation of the Department of Agriculture. . . . The only feasible plan to bring about a larger demand for American corn in foreign countries seems to be a more general introduction of this grain as an article of human food. The Department has accordingly inaugurated a special inquiry to ascertain what are the possibilities in this direction.[13]

During the six years Frank H. Hitchcock was Chief of the Section of Foreign Markets he was the author of 29 new bulletins, which differed from Secretary Morton's in that they ceased to carry extensive quotations from consular reports, became far more statistical, and gave more attention to trade barriers. They provide a record of the foreign trade in agricultural products through the years covered, but contain less in the way of suggestions of how to expand our exports than do some of Morton's bulletins.

In 1902 Secretary of Agriculture James Wilson emphasized the importance of extending fruit markets abroad:

> With the increasing production of special crops there is felt the urgent need for broader markets. This is particularly the case with perishable products, such as fruits and certain kinds of vegetables. There have lately been undertaken, in a limited way, some investigations having for their purpose the extension of the export trade and the improvement of the methods of handling these products for foreign and domestic use. Several experimental shipments have included summer apples, peaches, fall pears, and sweet potatoes — products in which an export trade is undeveloped; and winter apples, in which there is a large and increasing trade, but in which it is desirable to bring about improvements in the methods of handling and shipping. . . .
>
> . . . The fruit export trade needs careful investigation, both at home and abroad, in order that the methods of the American fruit grower may conform more closely to the foreign practices of handling and distributing our fruits and to the requirements of the foreign consumer.
>
> . . . To this end a plan is being devised whereby an experienced man will be sent to one or more of our most promising foreign markets to study all the prevailing conditions, and to secure and handle experimental shipments of fruits and vegetables, noting the condition in which various shipments arrive, the methods of packing which give the most satisfactory results, and looking after numerous other details which can be determined in no other way. Such an agent would also be in a position to secure valuable facts regarding the products with which we are compelled to compete, and would be able to point out methods by means of which we could best meet this competition.[14]

U. S. Industrial Commission of 1898

While the attention of the U. S. Department of Agriculture was focused on foreign markets as an outlet for farm surpluses during the 1890's, the Congress of the United States showed an interest in

[13] *Yearbook*, 1897, pp. 277–78.
[14] *Yearbook*, 1902 (Washington, 1903), pp. 16–17.

economic relations within the nation. On June 18, 1898, there was created by act of Congress an Industrial Commission. Part of the act reads:

Sec. 2. That it shall be the duty of this commission to investigate questions pertaining to immigration, to labor, to agriculture, to manufacturing, and to business, and to report to Congress and to suggest such legislation as it may deem best upon these subjects.

Sec. 3. That it shall furnish such information and suggest such laws as may be made a basis for uniform legislation by the various States of the Union, in order to harmonize conflicting interests and to be equitable to the laborer, the employer, the producer, and the consumer.[15]

Note that the purpose was to "harmonize conflicting interests and to be equitable" to all group interests. Nothing was said in the act about the marketing of farm products, but the subject was evidently implied for, in 1901, the Commission issued a report on the distribution of farm products.[16] That report was prepared by John Franklin Crowell, under the guidance of E. Dana Durand, Secretary of the Commission. Of that report, James H. Kyle, Chairman of the Commission, said:

It is not claimed that the conclusions set forth in this report are free from errors of judgment, but the statistical facts presented are from original and official sources and form a basis for intelligent analysis, useful alike to the legislator, the farmer, and the business man.[17]

That 508-page report was by all odds the best book on agricultural marketing available to students of agricultural economics at the beginning of the twentieth century. The facts assembled and the methods of presentation made it possible for the reader to develop in his mind a fairly clear picture of marketing processes and price-making forces. Crowell gave a clear-cut description of the distribution of cereals and the commercial distribution of cotton. A report on speculation and prices of wheat and cotton supplemented the descriptive chapters. The discussion of marketing of livestock and the distribution of dairy products was followed by a chapter showing the significance of cold storage and refrigerator cars in the marketing of perishable products. Cold storage had proved useful to both producer and consumer by holding the surpluses of one season to supply the deficit of another season. Refrigerator cars provided for the carrying of perishable products from a surplus area to a deficit area. Crowell's discussion of the effect of cold storage on the price of eggs illustrates his thinking:

. . . The market now expects storage houses to lay in a stock of May and June eggs regularly, and thereby keep up the level of prices, and when a

[15] *U. S. Statutes at Large,* 30:476.

[16] U. S. Industrial Commission, *Report of the Industrial Commission on the Distribution of Farm Products,* The Commission's *Reports,* Vol. 6. (Washington, 1901). (Note on p. 5: "Prepared . . . by John Franklin Crowell.")

[17] *Report,* p. 3.

protracted cold spell cuts off the supply of fresh eggs, then the storage supply is put upon the markets at a scarcity price or something less.

As a rule it is considerably less. In the Cincinnati market it is estimated that by means of the cold-storage demand the summer price of eggs is raised from about 5 to 7 cents per dozen to about 8 to 10 cents; the winter price is reduced from 25 to 30 cents to 15 to 18 cents per dozen. Far from being a monopoly feature in the egg trade, the cold-storage system operates as a balance wheel in regulating prices. In the summer it keeps up prices paid to producers; in the winter it keeps down prices paid by consumers.[18]

The distribution of the tobacco crop, the wool clip, hay, fruits, and vegetables were treated in an illuminating manner. The city end of agricultural marketing received special attention. Farm markets were described in 13 cities, and special attention was given to the city milk supply of eight cities, with maps illustrating the geography of the sources of supply.

Crowell's report set the pattern for many studies of the subject by agricultural experiment stations during the next two decades. In order that the reader may evaluate Crowell's ideas, which are presented as a part of the history of ideas, quotations are given from the summary statement:

> The first fact to be recognized in the survey of the American system of distributing farm products is that it is essentially a speculative system from beginning to end—speculative in the sense that after the products pass out of the producers' hands and until they pass into the consumers' control there is not a moment nor a stage in the distributive movement during which the one who has legal control over the property in question does not run the risk of a rise or fall in the value of the property. With the growth in the volume and scope of production and in the variety and the complexity of operations involved in the marketing of the products of the farm there have grown up gradually classes of men and commercial methods peculiar to the purposes and conditions which call them into existence; but in the vast army of men and in the infinite variety of methods there is not a single responsible agency engaged which is not in some way required to assume liability for loss or gain from changes in value occurring in the course of distribution from the producer to the consumer. In brief, the risks of distribution are shifted by both producers and consumers upon the distinct class of speculators known as distributers, who make it a business to take such risks and to divide them up among themselves on the basis of net profit on capital and cost of business capacity. This, in the final analysis, is the underlying fact in the system of distributing farm products in the United States.
>
> It may be true of a distributive system such as this that at any one time there are altogether too many men and too much machinery in it to operate it economically. The higher profits of speculative investment attract people in prosperous times, and the lower returns on productive enterprise in dull times tempt people with capital or capacity to become distributers. Both failures and successes elsewhere help to fill the ranks of the commercial distributer. This goes on until capital becomes abundant and competition among traders becomes too keen for any but the most capable organizers of commercial operations, who, on account of their superior efficiency, can command abundant capital to make themselves masters in some part of the

[18] *Report*, p. 299.

distributive process. Then old methods make way for new men. The volume of trade under a single control is greatly increased, the size of the transactions is enormously enlarged, but the rate of profit on each unit of farm product is far less than under the older and more expensive system of many commercial agents. The facts examined show that in the course of the past 25 years there has been a constant tendency toward a reduction in the difference between what the producer receives and what the consumer pays. In other words, the existing commercial system of distribution of farm products inevitably tends, under equitable laws and responsible uses of capital, to cost society a decreasing proportion of the value of the farm products. With the reduction of risks of trade the reduction of rates is inevitable. Fifteen years ago the ranks of commerce in farm products were congested. Since then the rate of commission has been so much reduced that the old-style commission business has been doomed to disappear in the cotton and the grain trades, the hay trade, and, to a considerable extent, in many other kinds of distribution.

In the distribution of live stock, of cotton, grain, tobacco, and wool the main tendency is to eliminate the more expensive middleman. It is doubtful whether the Granger of 30 years ago recognizes how fully the ambitions and aims of that organization have been realized in bringing the consumer and the producer nearer together. The telegraph and mail bring to the cotton and grain producers the prices of the world's markets day by day. The shipper simply ascertains by what ways and means the transfer from producer to consumer can be effected most economically. To err is to eliminate himself. There is no important class of cotton or grain dealers that can interpose itself at any point or place in the distributive process of these products and exact compensation regardless of services rendered. If the compensation is greater than the service is worth, competition of capital will seek to supplant the favored agent or agency; if compensation is less than the services are worth, that in itself will be sufficient to drive out or keep out those employed therein. In almost every trading center and for almost every leading farm product handled largely, it has been necessary to lump charges in order to keep trading during the past ten years. An attempt to impose even a triflingly small excess of charges on cotton or grain at one distribution point will be taken advantage of by competing points. To such influences the Gulf movement of grain is to be attributed, the loss of live stock to Chicago through its terminal charges, and the active conditions of competition under which most of the tobacco and some wool is marketed. Distribution of our main crops proceeds, on the whole, by the lines of least outlay between producers and consumers.

There are certain departments of distribution in which this competitive process does not get rid of the more expensive methods of distribution, or if it does eliminate them it does it far more slowly than in other distributive practices. Products whose distribution involves the existence of a visible supply or reserve stock in market awaiting a rise or fall of price to move them, such as cotton, grain, tobacco, and wool, all exhibit a decided tendency to eliminate the more expensive middleman. On the other hand, products, such as fruits and vegetables, where no storable visible supply exists because of their perishable nature, have not shown any but a very slow tendency to get rid of the more expensive methods of distribution. There may be three reasons for this: first, the extraordinary risks of depreciation; secondly, insufficiency of capital characterizing such distribution; and, thirdly, the absence of anything like large-scale handling of these products—fruits and vegetables—with a view to the elimination of risks and the introduction of economies not apt to occur under the commission system of many dealers.

Nothing but consolidation can economize costs of distribution. Owing to the absence of this factor the most unfavorably marketed farm products are fruits and vegetables.

. . . On the whole, however, with proper exceptions of commission men and commission markets that could be mentioned, the commission method of sales in the large cities is the most demoralizing feature in the entire range of distribution of farm products, as far as its effect upon the producer is concerned. Cooperative methods have not yet fully proved themselves available as substitute methods, though the Californian systems of marketing their crops of deciduous and citrus fruits is a successful development in the right direction.[19]

Crowell elaborated his view of price-making forces in his discussion of what makes farm prices, wholesale market prices, and prices of farm products to consumers:

Prices of farm products are to be viewed from three standpoints in the inquiry here being made: That of farm prices, in which the producer is directly interested; that of wholesale market prices, with which the speculative trade is primarily concerned; and, thirdly, that of retail prices, in which the consumer is chiefly interested.

What Makes Farm Prices

By farm prices is here meant the net value of farm products to the producer upon delivery at the local market. . . . Farm prices are, therefore, the lowest prices for farm products. Everybody else pays more than the farmer receives. Between the farmer and the wholesale market the local buyer generally intervenes. The price which the local buyer pays rises or falls with the demand in the wholesale centers to which the local buyer ships his supplies. The local buyer receives his prices from the wholesale centers through the dealers or commission men. The price to be paid the producer in the country for a given day is determined by the trade interests in the large receiving centers on the basis of commercial conditions. They act either individually or collectively in sending out their quotations to local buyers, stating the prices at which they are willing to receive products of the character in which they deal.

The question whether dealers in such distributing centers act individually as firms or collectively as the representatives of the market taken as a whole at that place depends upon conditions which are constantly changing. Different dealers in farm products of the same kind have different classes of customers and handle different grades of products. Under such circumstances it is evident that the motive for combination to control prices may be entirely wanting. The distinctively wholesale trade has always some such division of labor by which different firms confine themselves more or less to specific features of the trade. Wherever this is the case a combination to fix prices in general for a great variety of kinds and grades on farm products is practically out of the question. On the other hand, where a comparatively small number of traders handle the receipts from a given territory and are likely to come into competition one with another it is a fact that an understanding is frequently arrived at by which a price is fixed. . . .

Another fact makes it practically impossible for any important center of distribution to depress farm prices. Even the wholesale dealer who depends

[19] *Report,* pp. 5–7.

on the daily rural supply to meet the demand of the retail trade is obliged to take into account the prices which other receiving centers are paying for the same products. The price at Pittsburg can not be much lower, if any lower, than the price at Cincinnati in the territory where the two cities compete, nor can the Cincinnati price be for any length of time out of line with that of St. Louis or Chicago, or with prices at the Atlantic seaboard markets. By no possible arrangement can the wholesale trade in any one of these centers depress farm prices for any length of time much below what the other centers are willing to pay, beyond a slight advantage in freight rates which one may have over the others, and the competition of these markets in equidistant territory is usually so active as to bring about practically equivalent freight rates from the farmer's shipping point to the competing markets. In fact, the greatest force in the distributive system making for reduction of distributing expenses of handling farm products is the competition of the wholesale markets in large distributing centers for the products of the farm originating in the territory from which two or more cities draw their daily supplies. . . . Although it may be true that a temporary depression of prices through combination occasionally occurs, it is equally true that in nine cases out of ten a decline in prices arises from an undue increase in production or an undue decrease in consumption. . . .

The conclusions here arrived at apply especially to poultry, eggs, and dairy products generally. They amount substantially to this, that under existing conditions farm prices for these products are not determined by the combination of dealers in distributing centers, but are determined rather by the competition of distributing centers in their efforts to furnish a regular supply to the retail trade. . . .

What Makes Wholesale Market Prices

. . . Market price in the wholesale trade varies with the time and place, quantity and quality. It is the business of buyers and sellers in any market to know just what is the price at any particular time at which consumers will relieve the market of that quantity before additional supplies are received. That price we may define as the price which suffices to distribute the existing supply most advantageously to the seller, among consumers whose demands are most urgent, pending the arrival of fresh supplies from the source of production. Hence this price is determined largely by the state of the visible supply. Now, the wholesale market tends to evolve this particular price proper to the time and place with conditions then and there prevailing. On the basis of this price the producer plans his outlay of labor and capital; and on this basis the retailer handles goods or holds off from the market. When the price is too low for any length of time to pay the producer, he simply diverts his enterprise to other channels, at much loss, however; when it is too high the retailer handles little or none, and so leaves his capital lie idle for the time being. Lastly, consumers withdraw from the market until the proper price is reached at which the wholesale market can meet the measure of demand which the mass of consumers at a proper price are prepared to make.

The function of the speculator in the wholesale market is often misrepresented but the determination of this particular price, which serves as a basis for production and retail distribution, and thus for consumptive demand, is not the least of the economic services he renders to producers and consumers. This "proper" price, as it has been called, is, however, primarily made in the interest of the consumer rather than of the producer. The consumer's demand is the primary factor in determining the speculator's course of action. . . . The producer must market his crop, but the consumer is free

to refuse to buy. Hence it is the consumer's interest that is most nearly identical with that of the speculator.

This is the way market price is arrived at day by day. It is the price that just succeeds in distributing the visible supply among consumers. . . . It is evident, therefore, that dealers are interested in knowing the "proper price" of the market; and, further, it is evident that it is toward this point that the combined efforts of the buyer and seller, in proportion as they are well informed respecting the conditions of supply and demand, really converge.[20]

What Makes the Price of Farm Products to Consumers

The value of farm products to the consumer must, in the long run, be high enough to cover (1) the expenses of distribution and (2) the cost of production. In theoretical economics it is customary to regard both of these factors as included in cost of production, but in actual practice they are incurred by two very different economic agencies. In the comparison of the relative worth of the services of distributer and producer to society we have to consider them separately. The estimate of the consumer is what gives value to the surplus products of the farm. The greater the volume of these products put on the market, the lower the value which consumers as a class put upon each unit of product. This lower value brings the product within the reach of a larger consuming class without increasing the value to the producer. . . .In other words, the value of a product to the consumer depends on the utility of that product to him; the producer's estimate of value depends on the outlay he has to make—that is, the expenses of production.

The consumer's estimate and the producer's expenses mark the limits above and below which prices for farm products can not normally go. A normal price always lies within these limits. If the price goes above the consumer's estimate of its value, demand falls off; if the price goes below expenses of producing, supply decreases. In either case the price would be abnormally high or abnormally low. The latter has no doubt been the case with many farmers not enjoying the best advantages of soil and location during the decline in prices from 1873 to 1896—that is, they produced at an actual loss.

Production at abnormally low price to consumer, as compared with productive outlay, has been the rule throughout this period in nearly all of the least favored localities, owing to competition with the most favored productive localities. As long, therefore, as there was highly productive free land available in the West, the expenses of production on these most distant lands were the main factor in determining the price of farm products. These favored lands furnished the bulk of the surplus crops, and the surplus crop controlled the market. The price paid by the consumer under these conditions of surplus supply was determined by that preponderant portion of the necessary supply which was produced at the least cost of production or greatest advantage on the cheap and fertile lands opened since 1873.

It might be inferred from this that, as the fertile lands in question have been pretty well taken up, and as this cost of production has presumably increased, the price of wheat, for example, should recover permanently from the low level which prevailed while the wheat area was undergoing expansion by bringing new lands under cultivation. But there are certain influences in the world market to which our surplus wheat goes that prevent rapid recovery of depressed prices. . . .

The market price of Columbia River wheat, like that of our surplus wheat generally, is fixed by the deficiency in the foreign supply from domestic

[20] J. E. Cairnes, *Some Leading Principles of Political Economy Newly Expounded* (New York: Harper and Brothers, 1874), pp. 104–12.

sources of each country. All deficit countries go into the world market to get a portion of the surplus from such countries as have wheat to spare. If the deficit countries together have a large shortage they become all the more active bidders for the world's surplus wheat. If that surplus is less than usual the bidding is all the more active. Whether prices for American wheat are higher or lower depends altogether on such things as are beyond our own control at the time. A large European deficit and a large American surplus may not raise prices at all. A small European deficit and a small American surplus may likewise leave prices where they have been. Only in those years when it happens that there is a shortage in deficit countries large enough to create an extraordinary demand for our surplus do our prices really show much rise.

Whenever this coincidence of a foreign shortage equal to our surplus occurs it first shows itself in farm prices. The rise of farm prices induces producers to increase the acreage. If a favorable crop year ensues the world over, the surplus is in excess of the usual demands of deficit countries. If the crop year is not favorable the increase of acreage in the United States may still be large enough to increase the surplus supply considerably beyond the average deficit demand; consequently farm prices remain low if they do not fall still lower than before. Such increase in wheat acreage has occurred in the South and the Southwest during the wheat year just closed, in immediate response to the rise of wheat prices during 1898 and 1899.

The statement that farm prices of wheat depend on the extent of the deficiency in the crops of importing countries, must therefore be modified by a few considerations which this statement seems to overlook.

1. The capacity of a deficit country to take our surplus depends on the purchasing power of the consumers of that country. If industry of various kinds is depressed there to such an extent as to leave a considerable proportion of consumers unemployed, then the purchasing power of that country on the part of these consumers is very much reduced; consequently, this inability of a considerable class of consumers to buy has the same effect as the loss of a part of our market in that country.
2. A second factor in the temporary reduction of demand on the part of importing countries is the capacity of consumers of such countries to find substitutes for cereal food supplies other than wheat. Vegetables of local production, and even the cheaper meats, at times succeed in effectually displacing a certain portion of a previously existing demand for wheat and wheat flour.
3. A deficit in the wheat crop of India does not open a correspondingly large demand for wheat for consumption in that country, because these people, as a rule, find wheat too dear for their daily consumption. . . .

It is evident that these are conditions which limit the theory that a deficit of the wheat crop in other countries than our own is to be credited without discount to the improvement of our wheat-market prospects in the countries which for the time being have a deficiency in a domestic supply. Our wheat market is no doubt capable of development within recognized limits, but the recognition of these limitations will help the producer to appreciate his position under a reign of low prices. Whether he can afford to wait for the development of markets for his surplus in foreign countries, is a question for each producer to decide for himself.

And the form of the question is simply this: Whether, at existing prices, it is reasonable to expect to make as much net profit on the total farm investment of labor and capital on this single line of cereal farming as we

might expect to derive from an equivalent outlay of capital and labor on land devoted to a greater variety of products, in which grain for commercial purposes figured as one among several other sources of income.

The solution of such a problem may require a few years of experimentation after a study of the experience of other producers and of the market for contemplated substitutes for the single cereal crop. Usually this experimenting does not begin until low prices force upon the producer the alternative of breaking with his traditional farm policy or becoming a bankrupt. At that juncture his capital is sometimes too meager to make, successfully, experiments on new lines of productive outlays. The departure from grain growing as the main farming in the middle West during the past decade, and the development of dairying as a substitute, or rather as a supplementary use of economic resources, was a solution of the question of how to meet the low prices of grain. The fattening of cattle under high prices of meat is but another solution of the same problem of adjustment of production to the demands of consumption by following the line of better prices.[21]

Crowell's statements regarding markets and prices have been quoted at length because they constitute the most complete presentation of the subject we have found in the documentary literature in the period prior to World War I. Crowell was, obviously, thoroughly trained in economic theory as well as familiar with the facts of agricultural marketing. His statements are worthy of careful study by the student because of their value as a standard of comparison with conditions in later periods, as well as for their importance as a segment of the agricultural history at the turn of the century after nearly four decades of agricultural expansion motivated by the desire to acquire cheap land as much as the desire to sell farm products at a profit.

Division of Foreign Markets Expanded

On July 1, 1903, the Division of Statistics became the Bureau of Statistics, and the Division of Foreign Markets was made a Division of that Bureau under the direction of the Statistician.[22] F. H. Hitchcock resigned on March 31, 1903,[23] and George K. Holmes, who had been in the Division of Statistics since 1895, was put in charge of the work on foreign markets. Holmes started his new work with a word picture of the geography of foreign markets for the surpluses produced by the farmers of the United States. That article was entitled "The Nation's Farm Surplus."[24] Holmes stated that, in terms of value, about 85 per cent of the agricultural products exported from the United States consisted of cotton, grain, live animals, meat and meat products.[25] He showed also that 85 to 90 per cent of these exports went to Europe, while the rest were widely dispersed:

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[21] U. S. Industrial Commission, *Report of the Industrial Commission on the Distribution of Farm Products* (Washington, 1901), Vol. 6, pp. 32, 29–35.

[22] U.S.D.A., *Annual Report,* 1903 (Washington, 1903), p. LXX.

[23] *Annual Report,* 1903, p. 447.

[24] G. K. Holmes, "The Nation's Farm Surplus," U.S.D.A., *Yearbook,* 1903 (Washington, 1904), pp. 479–90.

[25] *Yearbook,* 1903, p. 481.

. . . The United Kingdom takes about one-half of the exports of the farm products of this country, and Germany about one-sixth, while France, the Netherlands, Belgium, Canada, and Italy take from 3 to 5 per cent each. Farm products go from this country to many strange and remote nooks and corners of the world. Africa, interior and coastwise, gets them in considerable amounts. Over 2 per cent of these exports in 1902 went to British Africa. Portuguese Africa takes as much as one-fourth of 1 per cent of our total farm product exports. China in recent years takes a million dollars' worth of them annually. These exports go to Russian China, to lone islands in the Atlantic and Pacific Oceans, to Korea, to the icy shores of Greenland and Iceland, and to all of the many nations of the American Continent, of Europe and Asia, and to the various governments of Australasia.

Upon dividing the countries of the earth into six natural geographical sections, it is noticed that the exports of farm products to Europe amount to about 85 to 90 per cent of the total; North America, 6 to 7 per cent; and Asia, South America, Africa, and Oceania less than 3 per cent each.[26]

Keeping up-to-date statistics of exports and imports, and preparing special reports on specific commodities and countries, which threw light on the prospect of exporting the surpluses of American agriculture constituted the major work of the Division of Foreign Markets.

In 1904 the Division submitted for publication a bulletin on the transportation routes used in exporting American farm products. In a prefatory note, Holmes said of the bulletin:

Its chief purpose is to describe briefly some of the procedures in exporting farm products and, by means of lists of fast freight lines to Atlantic ports and foreign and domestic ports between which steamships regularly ply, to indicate the established routes over which shipments may be forwarded.[27]

Then a bulletin was issued on the imports of farm and forest products by countries from which consigned, followed by a similar bulletin on United States exports of agricultural products. Bulletins on specific products[28] covered the international sugar situation, hops in world trade, cereal production in Europe, European grain trade, Russian wheat trade, and Russian wheat and wheat flour in European markets.

Holmes soon found himself thinking in terms of production, distribution, and marketing of farm products at home and abroad. In 1907 a bulletin was published on the cost of hauling products from the farm to the shipping point.[29] In the same year a bulletin on the United States meat supply and surplus was presented.[30] That bulletin included much material on production and consumption of meat in the United States, as well as information relating to exports and the

[26] *Yearbook*, 1903, p. 484.

[27] E. G. Ward, Jr., "Methods and Routes for Exporting Farm Products," U.S.D.A., Bureau of Statistics, *Bulletin* 29 (Washington, 1904), p. 3.

[28] U.S.D.A., Bureau of Statistics (Washington): "International Sugar Situation," by F. R. Rutter, *Bulletin* 30 (1904); "Imports of Farm and Forest Products, 1901–1903," *Bulletin* 31 (1905); "Exports of Farm and Forest Products, 1901–1903," *Bulletin* 32 (1905); "Hops in Principal Countries," by Eugene Merritt, *Bulletin* 50 (1907); "Cereal Production of Europe," by F. R. Rutter, *Bulletin* 68 (1908); "European Grain Trade," by F. R. Rutter, *Bulletin* 69 (1908); "Russia's Wheat Trade," by I. M. Rubinow, *Bulletin* 65 (1908); and "Russian Wheat and Wheat Flour in European Markets," by I. M. Rubinow, *Bulletin* 66 (1908).

[29] F. B. Andrews, "Costs of Hauling Crops From Farms to Shipping Points," U.S.D.A., Bureau of Statistics, *Bulletin* 49 (Washington, 1907).

[30] G. K. Holmes, "Meat Supply and Surplus, With Consideration of Consumption and Exports," U.S.D.A., Bureau of Statistics, *Bulletin* 55 (Washington, 1907).

consumption of meat in foreign countries. That broadening of the scope of the work led, in 1908, to a change in the name from the Division of Foreign Markets to the Division of Production and Distribution,[31] thus utilizing the terms that J. R. Dodge had used for the title of his 200-page report in 1893. The newly named Division of Production and Distribution was described:

> . . . concerned with the production of wealth on farms, with the distribution of farm products at home and abroad, and with the economic conditions pertaining to the agricultural element of the population. The scope and variety of its work are indicated by such subjects as the production and consumption of meat and the foreign markets for the national surplus of meat; farmers' cooperative organizations for insuring against loss by fire, for buying supplies, for selling products, etc.; the problems of the production and consumption of wheat in the chief countries; statistical compilations of the number of domestic animals in most of the countries of the world, of the foreign trade of the United States in agricultural products, of crop production in many countries, of agricultural exports and imports for all countries for which the information is published; a chronological record of the principal events that have marked the progress and improvement of agriculture in the United States; changes in farm values and the causes thereof; questions involved in the transportation of farm products by rail, inland waterways, ocean, and wagon; compilations and revisions for other Bureaus.[32]

That expansion of the marketing work to include domestic marketing problems was in line with trends of the time. In 1894 the problem had been that of disposing of burdensome surpluses of farm products which were depressing prices in the domestic market. By 1908 complaints were arising from two sources: Farmers felt that they were getting too small a share of the consumer's dollar, and consumers thought they were paying too much for what they bought. Attention was focused, therefore, upon methods of reducing middleman charges in the interest of producers and consumers.

Congress Interested

In 1910, and again in 1911, Congress responded to that interest by asking the U. S. Department of Agriculture to study the subject, but made no additional appropriation for that purpose.[33] In 1912 the language appropriating funds for the year ending June 30, 1913, was made more specific:

> And that the Secretary of Agriculture be and he is hereby directed to secure from the various branches of the department having authority to investigate such matters, reports relative to systems of marketing farm products, cooperative or otherwise, in practice in various sections of the United States and of the demand for such products in various trade centers, and shall make

[31] See U.S.D.A., *Annual Report,* 1909 (Washington, 1910), p. 655.
[32] U.S.D.A., *Annual Reports,* 1908 (Washington, 1909), pp. 703–04.
[33] Congress authorized the Secretary of Agriculture "to investigate the cost of food supplies at the farm and to the consumer, and to disseminate the results of such investigation in whatever manner he may deem best," *U. S. Statutes at Large,* 36(1):440, 1264.

such recommendations to Congress relative to further investigations of these questions and the dissemination of such information, as he shall deem necessary.[34]

Secretary Wilson responded to that directive by asking each branch of the Department of Agriculture to indicate what was being done in the Department and what might be done in a new division of markets. Heads of business concerns were called upon to supply information. George K. Holmes was asked to supervise the work and prepare a report. On December 26, 1912, James Wilson endorsed for publication a report of 391 pages, prepared by experts and specialists throughout the Department, "concerning systems of marketing farm products and the demand for such products at trade centers."[35] The report stated:

> . . . This department is already performing some service in connection with the marketing of agricultural products, the main features of which follow:
>
> There have been under way for several years definite experimental investigations into the whole question of transporting, storing, and marketing, as well as growing and harvesting fruits, including oranges, grapes, apples, peaches, and other crops. These investigations relate to the domestic and foreign movement of fruits.
>
> A thorough investigation and study of the grading, transportation, and handling of cereals, particularly corn, wheat, and rice, has been going on for several years, and valuable information has been secured.
>
> Under the direction of Congress, standards for the different grades of cotton were fixed by the department two or three years ago, and recently definite work has been undertaken looking to the improvement of the present methods of marketing cotton, one phase of the work being the organization of cooperative farmers' organizations for the handling and marketing of the crop.
>
> For a number of years careful studies have been made of the production, transportation, storage, and marketing of all the standard truck crops, such as potatoes, cabbage, celery, tomatoes, onions, etc. A great deal of valuable data has been accumulated regarding the marketing of such crops, and one tangible result of the work has been the organization of ever increasing numbers of associations of truck growers for the cooperative marketing of their produce.
>
> The department also is studying market methods and the conditions surrounding the marketing of eggs, milk, butter, and other animal products in connection with studies of the methods and cost of production of these products.
>
> If Congress should establish a Division of Markets in the Department of Agriculture, it may be said with confidence that the requirements of the act establishing the division would be performed as fully as the appropriation therefor permitted. This service might be so large as to necessitate the expenditure of several million dollars or it might be more moderate in proportions and cost no more than one or two hundred thousand dollars. It is

[34] *U. S. Statutes at Large*, 37(1):295–96, 300. Also quoted in "Systems of Marketing Farm Products and Demand for Such Products at Trade Centers," U.S.D.A., Office of the Secretary, *Report* 98 (Washington, 1913), p. 2.

[35] "Systems of Marketing Farm Products and Demand for Such Products at Trade Centers," U.S.D.A., Office of the Secretary, *Report* 98 (Washington, 1913), p. 2. ("Prepared in the Bureau of Statistics under the immediate supervision of G. K. Holmes.")

a basic assumption in the preparation of this report that Congress would not want to expend the larger amount mentioned.[36]

Methods of distribution, finding a market, and associative marketing were mentioned as the "premises that must be considered in planning the establishment of a Division of Markets in the Department of Agriculture."[37] The timidity of the Department at that time was indicated by the fact that market news and telegraphic services were mentioned as "lines of service practically impossible."[38]

> If the department were to take charge of any feature of the marketing of farm products, if it were to perform the duty of finding customers or markets, if it were to perform the duty of ascertaining market conditions and prices every day in all principal markets and undertake to make the information serviceable to farmers throughout the country, the expense of such undertakings would be practically prohibitive.
>
> Take the matter of market news at trade centers. To maintain a service of this sort it would be necessary to employ men at trade centers to be in constant touch with their markets and to report by telegraph daily or oftener the prices of farm products and the state of the market with regard to supplies.
>
> The cost of this service would be enormous. . . .
>
> The matter of performing a telegraphic service has consequences which must inevitably follow. Suppose, for instance, that a Division of Markets were collecting information by telegraph concerning prices and market conditions at trade centers and were to publish the report that there was a scarcity of a certain product in a certain market and that prices were high enough to be extremely profitable to producers. It is likely that producers having no market associations, who were able to reach the market reported as being in a state of scarcity and high prices, would send to that market quantities of the products sufficient to create a state of glut.
>
> The individual producers and shippers would not be under the control of any coordinating power, and in order that the news supplied to them by the department might be made useful it would be necessary for the department to perform the duties of a director of shipments in order that markets might not be glutted.
>
> As will be observed in reading the descriptions of the systems of marketing by cooperative associations on subsequent pages, these associations are in no need of a telegraphic service performed by the Government. They have their own telegraphic service and, combined with this, the essential service of control of shipments, both in quantity and in choice of market, and the services of inspectors and selling agents.
>
> Furthermore, suppose that the individual farmer were to receive telegraphic news from the department informing him that the best market at that instant was a certain one named. Probably he has no means of reaching that market; no knowledge of a commission merchant or other person to whom he might consign his product. In such case the farmer could make no attempt to take advantage of the news.
>
> Suppose, however, that he could ship his product to some consignee in the market mentioned. The goods are eventually received, but in the meantime the price has fallen, perhaps the market has become glutted, and the producer who sent his products to that market hardly clears expenses. What

[36] "Systems of Marketing and Demand," pp. 18–19.
[37] "Systems of Marketing and Demand," p. 18.
[38] "Systems of Marketing and Demand," p. 18.

will be the attitude toward the marketing service of the department? When instances of this sort are sufficiently multiplied, as they would be in time, the marketing service of the department would be generally regarded as untrustworthy, as affording profitable returns in some cases and quite the reverse in others, and the unfavorable experiences would be the ones that the public would remember.[39]

Under "Recommendations" an outline of services which might be performed by a division of markets was followed by a modest request for $100,000 with which to make a beginning. The recommendations contain the ideas of the time. As such they are quoted:

Recommendations

1. A survey of the systems of marketing farm products clearly discovers what the farmers can best do to their advantage. They must associate themselves together for the purpose of assembling their individual contributions of products, of shipping in carload lots, of obtaining market news at places to which it is practicable to send their products, to sell in a considerable number of markets if not in many markets, and to secure the various other economic gains of associative selling. But farmers need some help in establishing associations. They always need a leader for such purpose and there may be no leader.

A division of markets could perform excellent service in helping farmers to help themselves to organize marketing associations. These associations could either handle their products until sold in various markets, or could ship their products to a noncooperative marketing agency which would take charge of the entire business of distribution from a central receiving point. It seems not always to be feasible to market products cooperatively, or, at any rate, the producers are not always disposed to do so. However that may be, there are many noncooperative marketing agencies in this country that are performing excellent service for farmers, and some of them are doing a business of immense proportions. A division of markets, equipped with a corps of competent field agents, could get into touch with farmers for the purpose of promoting the organization of marketing associations wherever the farmers request assistance or information; the agent could meet the assembled farmers and practically organize them if they desired.

It can hardly be doubted that this service can be successfully performed and, eventually, with results greatly beneficial to farmers.

The traveling field agents also could perform good service in examining into the affairs of weak and unsuccessful marketing associations and advise changes for their improvement.

2. Farmers may organize well for selling their products, and they may receive daily from their markets all that could be desired in information relating to prices and to existing market conditions, but this is not all that they need for the business-like marketing of their products. They should know what the production of the crop is to be, and this information is equally important to consumers.

For many years the Department of Agriculture has estimated the production of principal crops after harvest, and during the last year or so has been indicating the prospective production of some of the principal crops a short time before harvest. A knowledge of what the crop is to be is most essential in marketing. . . .

If a division of markets is established, it should be equipped for ascertaining, in connection with the other crop-reporting service of the department,

[39] "Systems of Marketing and Demand," pp. 19–20.

the prospective quantitative production of all vegetable, fruit, berry, and other crops that are of considerable commercial account, the production of which is not now estimated quantitatively by this department. For this purpose local correspondents could be employed, and in addition to these it would be necessary to employ, under salary, local agents and traveling field agents.

3. Marketing associations have at least fairly well worked out the problems of grading and packing products, but the independent producer is poorly equipped with knowledge concerning this subject, and even the associations do not agree in practice where it would be better for them and for the consumer if they did.

It is desirable, therefore, that a division of markets, if established, should be authorized to investigate the subjects of the grading and packing of products, and also the subject of the character of the package or container, the questions of weights and measures, and the peculiar problems of market preferences. . . .

4. General market news service is not recommended. If such service were derived from telegraphic reports, the expense would be enormous. If derived from reports of local agents sent by mail, the expense would be large and the service would not be prompt. Whatever this service might practically be, it would not be useful to marketing associations and agencies, for the reason that they would already know the facts from their own sources of information before the department's report could reach them.

There may be a telegraphic service, however, outside of news at markets, which would be new and serviceable, consisting of prompt reports of the time of the beginning of shipments from places of chief production, the time of the ending of shipments from such places, and, perhaps, reports of the quantities of shipments, actual and prospective, from the principal shipping places. The expense of such undertakings, however, would be large.

5. As previously indicated, if a division of markets is established it should be provided with a *corps of traveling field agents*[40] and a large corps of local agents and correspondents. The various utilities of these agents and correspondents may be partly itemized as follows:

To help producers to organize for marketing cooperatively[40] or through a noncooperative agency; the examination of local difficulties; to help producers to find markets; to report the current descriptive condition of crops in addition to the work already done by the department's crop-reporting service; to estimate the probable production of crops a short time before harvest; to report the beginning and ending of the shipping season; to report the crop movement from producing points through "gateways" to principal markets.

6. A Division of Markets must naturally be concerned with problems of transportation. It should be empowered to ascertain the facts with regard to the routes, methods, time, and costs of transportation by all kinds of carriers from chief producing to chief marketing points and for such minor points as will provide information that will be required by the public.

7. Storage has become an important feature in the distribution of farm products, and a Division of Markets should be able to investigate public storage rates and accommodations at all points, and also the subject of storage in transit, and to compile data comparing the gains or losses due to selling just after harvest with those due to selling after a period of storage. The storage may be either on the farm or elsewhere.

8. The business of a commission merchant is of such high importance in the distribution of farm products that his business should be a subject for in-

[40] Italics ours.

vestigation by a Division of Markets. If a list of trustworthy, honest, honorable commission merchants could be established and published it would be of service to farmers. A list of commission merchants in a city for which the board of trade or chamber of commerce will stand as sponsor might be published by the department.

9. It is a matter of some importance that the costs of the distribution of all farm products from producer to consumer should be investigated. These costs should be itemized, and their total should be compared with prices at the farm and with consumers' prices.

10. A description of principal markets should be prepared and published. Among the items of the information to be covered in such description would be the hour of opening market places; the local fancies of consumers; how products are handled; the relative supply, by months, throughout the year; the course of prices; methods of sale, as through the commission merchant or wholesale dealer, at auction, etc.; imports from foreign markets.

11. A description of chief producing regions would have some utility. It might well be devoted to the characteristics of the products, the methods of marketing, the places where products are marketed, producers' prices, competition with other producing regions, etc.

12. Notwithstanding the decline of exports of some important farm products, the export trade is still of enormous amount, and probably will be so for an indefinite time. There are many agricultural producers to whom information with regard to foreign markets might be useful, who are not now exporting and are not likely to export unless provided with information. For some products, such as fresh apples, other fruits, some of the vegetables, and other products with minor exports, information might well be published concerning the method of reaching foreign markets, methods of selling in them, prices, gross and net, costs of exporting, the best time to export, and difficulties, if any, in connection with the tariff, etc.

13. To make, keep, and publish an elaborate record of prices of farm products would be a useful service that could be performed by a Divison of Markets. Among the classes of prices that might well be compiled are producers' prices at the farm, wholesale prices, retail prices.

14. It would be important that a Division of Markets should make, maintain, and publish a list of associations for marketing farm products and of agencies for marketing for associations of farmers and a list of buying associations and agencies of associations of consumers. In addition to these, annual statistics should be collected and published concerning the business done by marketing associations.

15. The experience of marketing associations in foreign countries for possible utilization by producers in this country should be ascertained and made known to them, and for this purpose a Division of Markets should investigate the systems of marketing farm products in other countries and publish the results, especial attention being given to those features which it may be presumed might be adopted beneficially in this country.

16. For much of the work of a Division of Markets dependence would need to be placed on publications, including periodicals, and it should be authorized to expend a large amount in the beginning and a liberal amount annually for the purpose of establishing and maintaining a library.

17. A Division of Markets must necessarily publish bulletins, circulars, and information in other forms. The results of its investigations of the facts pertaining to particular topics and problems must continually present themselves for publication, and provisions should be made therefor.

18. A cheapening of farmer's costs of marketing will naturally result in gain to the producer rather than to the consumer. If the consumer is to gain

by changes in the costs of distribution, it seems probable that he must do so through cheapening or eliminating costs at his end of the chain of distribution. Consumers can cheapen the costs of farm products by cooperative buying and by reducing the expenses of retail and other local distribution. The consumers' aspect of the problems of the distribution of farm products is a conspicuous one at the present time, and problems in distribution that are concerning the consumer rather than the producer may well be included within the service of a Division of Markets. The foregoing recommendations are repeated for service in behalf of consumers as far as applicable.

It would be unreasonable to expect that a Division of Markets, with duties prescribed as suggested, or with fewer duties than these and yet of sufficient importance to make such a new office really serviceable, could be useful at the very beginning. Considerable time would be required properly to organize the office and field forces and to bring lines of service up to smooth, effective work. Time would be required also to ascertain in what particular efforts it could be most useful and in what directions it might better develop.

The cost of maintaining an office of this sort so as to make it worth while can not be estimated at this time. If such an office is established, its duties should be mostly permissive instead of mandatory, in order that it may not undertake too much in the beginning and that it may feel its way to the service that it can best perform. An appropriation of $100,000 might be sufficient for the first year, but almost certainly would be insufficient afterwards.[41]

Caroline B. Sherman summarized the reaction in Congress to that report:

About this time numerous bills were introduced in Congress to establish a division of markets in the Department of Agriculture or to take some similar action. The hearings and reports on these bills give evidence of the urgent interest of the public and the determination of many leaders to secure legislation providing definite results and relief. . . .

Of the proposed legislation, S. 5294, an Act to establish in the Bureau of Statistics, Department of Agriculture, a Division of Markets, made the greatest progress. It was passed by the Senate and was reported favorably by the House Committee on Agriculture. Its scope was great and, according to a member of the Committee, from two hundred million to a billion dollars a year would have been required to carry out its provisions.[42]

After considerable debate and numerous conferences, in which many elaborate schemes were proposed and discussed, wiser counsel finally prevailed, and it was decided merely to insert an item in the agricultural appropriation bill for 1914, under which tentative work might begin in a rather independent way. A few of the legislators realized that many preliminary investigations must be made and much preliminary work done before the Government could safely undertake to make far-reaching suggestions regarding so complicated a subject, and they therefore urged a conservative beginning. This was in line with the recommendations made by James Wilson, the Secretary of Agriculture, and others who were well informed regarding the already existing possibilities for developing such work in the Department and the necessity for proceeding along sound economic lines.[43]

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[41] "Systems and Demand," pp. 20–24.

[42] *Congressional Record,* 49(3):3009 (Feb. 11, 1913).

[43] U. S. Congress, Committee on Agriculture, *Hearings . . . on the Estimates of Appropriations for the Fiscal Year Ending June 30, 1913,* 62nd Congress, 2nd Session, pp. 254–57; and *Hearings . . . on the Estimates of Appropriations for the Fiscal Year Ending June 30, 1914,* pp. 300–01.

Accordingly the House Committee on Agriculture inserted such an item in the appropriation bill with the following explanation:[44]

". . . In response to many appeals made to this committee by various organizations of citizens of this country for the establishment of a division of markets in the Department of Agriculture, this item is inserted in the bill to enable such work to be done by the Department of Agriculture along the lines indicated, that Congress may be able to decide as to the feasibility and desirability of establishing at some future time the division of markets as requested."

This item passed the House and appeared in the bill referred to the Senate Committee on Agriculture and Forestry, where the item was amended and the work was transferred to the Bureau of Statistics. The various proposed amendments are set forth in detail in the *Congressional Record.*[45] The Senate concurred in the recommendations of its committee and the amended bill was sent back to the House. The Conference Committee refused to accept the changes with the result that the Senate receded from both of its amendments. The agricultural appropriation bill for 1914 as finally passed included the following sentence:[46]

". . . To enable the Secretary of Agriculture to acquire and to diffuse among the people of the United States useful information on subjects connected with the marketing and distributing of farm products, and for the employment of persons and means necessary in the city of Washington and elsewhere, there is hereby appropriated the sum of $50,000, of which sum $10,000 shall be immediately available."

This bill was approved by the retiring President [William Howard Taft] on March 4, 1913.[47]

Secretary of Agriculture, James Wilson, in his sixteenth and last report, which was for the year ending June 30, 1912, reported the work of G. K. Holmes under the subject heading "Agricultural Economics":

The Division of Production and Distribution has developed a scope of work in directions heretofore little, if at all, explored. It has created a general survey of agricultural conditions and accomplishments in the United States composed of the more important elements of production in quantity and value; of national surplus, deficiency, and consumption; of farm wealth and labor; and of economic achievement and agricultural progress.

The production of important agricultural commodities by the principal countries of the world below and above their respective requirements for consumption, the sources of the supply of such commodities to deficient countries, and the destination of the surpluses of exporting countries, together constitute a subject of unceasing popular interest which is receiving much attention in this division.

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[44] "Agricultural Appropriation Bill" [for the fiscal year ending June 30, 1914], report submitted by Mr. Lamb, from the Committee on Agriculture, Jan. 20, 1913, 62nd Congress, 3rd Session, *House Report 1348,* p. 10 (Serial 6334).

[45] "Agricultural Appropriation Bill" [for the fiscal year ending June 30, 1914], report submitted by Mr. Burnham, from the Committee on Agriculture and Forestry, Feb. 21, 1913, 62nd Congress, 3rd Session, *Senate Report 1288,* p. 6 (Serial 6330). *Congressional Record,* 49(5): 4139–40, 4650 (Feb. 27, 1913).

[46] *U. S. Statutes at Large,* 37(1):854.

[47] C. B. Sherman, "The Legal Basis of the Marketing Work of the United States Department of Agriculture," *Agricultural History,* 11:292–94 (October 1937).

The historical aspect of the agricultural production of the United States in particular products and of the surplus or deficiency with regard to domestic consumption has occasioned much painstaking and original work.

The transportation of agricultural products from farm to consumer by wagon, rail, and water, and the costs and methods of marketing are subjects which have been productive of much original work. The division is accumulating much information relating to farmers' associations on the cooperative plan for production, selling, and buying; for fire, live stock, and other insurance; for warehousing; for performing telephone service; and for promoting mutual helpfulness.

Along the lines of work pursued the effort is to establish permanent results of frequent utility to the offices of the department, to the many applicants for information outside of the department, and to the general public. Most of the many bulletins issued from this division are of permanent usefulness and are in current demand; the many special articles that have been prepared for the Yearbook by persons employed in this division are of continuing service; and the threescore statistical tables contributed to the agricultural statistics of the Yearbook are brought down to date annually and are of permanent value.

This is an office of special research and investigation within a field not covered by any office in any other department.[48]

Marketing Work Planned

Thus when James Wilson's successor, David F. Houston, became Secretary of Agriculture under President Woodrow Wilson, in March, 1913, valuable preliminary work had already been done toward the creation of a bureau of markets. Houston was an economist and also had many other qualifications that admirably fitted him for the task of directing that development.

It has been noted that the Senate had desired to put the marketing work in the Bureau of Statistics, but the House would not concur. The Bureau of Plant Industry was also making a bid for the marketing work, as is evidenced by the following excerpt from a circular issued March 22, 1913, under the title "The Economics of Crop Disposal."

It is now more than 20 years since the beginning of the investigations which were finally consolidated in the organization of the Bureau of Plant Industry 12 years ago. These investigations have been devoted primarily to the problems of crop production. . . . We have devoted but little attention to those problems which confront the farmer in the disposal of his crop. In other words, the chief aim of our investigations and of our educational work as well has been to stimulate the growth of those "two blades of grass."

In this work we have been measurably successful. Nevertheless, the cost of living has continued to increase, and this is a matter with which we are professionally concerned, since probably more than any other single body of men we have to do with the fundamental factors of that complex problem. It seems to me obvious that if we are to attack that problem effectively we must look into the methods of crop disposal as well as into those of crop production. Such an inquiry, if undertaken seriously, may be expected to yield results as striking, as far-reaching, and as beneficial as any that we have already achieved.

[48] U.S.D.A., *Annual Reports,* 1912 (Washington, 1913), pp. 195–96.

If it is a proper function of the Bureau of Plant Industry to work out the problems of our agricultural industries, there can be no doubt as to the need or the propriety of investigating the problem of the disposal or utilization of crops. The advantageous disposal of a crop is quite as important as its successful production. The producer is continually harassed with doubt as to what crop or crops to plant or where or how best to market those which he has already grown.

The stabilization of food supplies has been one of the fundamental factors in the development of our civilization. . . .

With very few exceptions, food scarcities are due rather to inadequate facilities for distribution than to actual lack of supply. In a majority of cases there is plenty of food in one country when there is a shortage in another. In a country as large as ours this is often true of its different parts. Something of the same sort applies with reference to the distribution of supplies throughout the year.

So much for the demand. Those who make it their business to produce supplies of food and clothing have the same desire for a uniform demand that the consumer has for a uniform supply. The greatest risks of agricultural production are the market risks. A uniform demand for any agricultural product at a price that in the average of seasons gives reasonable profits for production would relieve the farmer of one of his most perplexing problems. . . .

. . . The Bureau of Plant Industry represents one of the institutions established by society in the effort to provide itself with the necessities of life. We need occasionally to consider the larger phases of our problem — to take new bearings — for it is required of us not only that we execute the orders we receive, but also that we indicate what new orders should be given us. . . .

. . . in the work we are now doing we have acute need for the kind of information that is to be gained from investigations in the economics of crop disposal. Such investigations might spare us expensive efforts in the solution of production problems. In the case of many of our minor crops the important question often is not how best to grow them in a certain place, but whether or not it is worth while to grow them there at all. Such investigations are particularly appropriate to the Bureau of Plant Industry, since they involve interstate operations, while many of the production problems upon which we are engaged are more essentially local in their nature.

The particular plea that I wish to make is that as a group of men working together upon allied subjects we ought to give a larger proportion of our thought to the economic phases of the industries upon which we are at work.[49]

Five days after Scofield's circular was issued . . .

A meeting of officials of the Department of Agriculture was held . . . March 27, 1913, in the conference room of the Bureau of Plant Industry . . . for the purpose of outlining the work of the various Bureaus in connection with the marketing and distribution of farm products to report results already accomplished, and to discuss plans for the further development of these investigations in carrying into effect the provision in the Agricultural appropriation bill for the fiscal year 1914 setting aside $50,000 for this purpose.

The following were present: The Secretary of Agriculture; the Assistant Secretary; Dr. A. D. Melvin, Chief of the Bureau of Animal Industry; Prof. William A. Taylor, Chief of the Bureau of Plant Industry; Prof. L. C. Corbett, Assistant Chief, Bureau of Plant Industry; Mr. B. H. Rawl, Chief of the Dairy Division, Bureau of Animal Industry; Dr. Mary E. Pennington, Chief of Food Research Laboratory, Bureau of Chemistry; and Mr. A. V. Stuben-

[49] C. S. Scofield, "The Economics of Crop Disposal," U.S.D.A., Bureau of Plant Industry, *Circular* 118, entitled "Miscellaneous Papers" (Washington, 1913), pp. 3–4, 9, 10.

rauch, in charge of Fruit Transportation and Storage Investigations; Dr. J. W. T. Duvel, in charge of Grain Standardization; Mr. C. J. Brand, in charge of Cotton Cooperative Handling and Marketing Investigations; Prof. W. J. Spillman, in charge of Farm Management Investigations; and Mr. C. S. Scofield, in charge of Western Irrigation Agriculture, of the Bureau of Plant Industry.[50]

In that conference Houston used group thinking as a means of clarifying ideas, unifying and co-ordinating the work of the Department. Five reports were presented: One from the Bureau of Chemistry, one from the Bureau of Animal Industry, and three from the Bureau of Plant Industry.

The report from the Bureau of Chemistry, presented by Mary E. Pennington, showed that the marketing work of that Bureau had to do with the physical, chemical, and biological aspects of the preparation, storage, transportation, and refrigeration of food products, with special reference to poultry products.[51] The work was intended to lay the scientific foundation for the correct preparation and handling of poultry and eggs from the local market to the consumer with a view to preserving the quality of the product. The investigations, as set forth in Mary Pennington's report, did not deal with the more strictly economic aspects of the marketing of those products.

B. H. Rawl, Chief of the Dairy Division, Bureau of Animal Industry, told of the marketing work in his division, which included studies of the cost of handling milk for city consumption, butter inspection in large markets, the production and marketing of cheese, and the co-operative handling of dairy products. Forces influencing prices were considered with the farmer's interest especially in mind.

A. V. Stubenrauch, Bureau of Plant Industry, presented a paper in which he said:

> The investigation of problems pertaining to the transportation and storage of fruits has been confined largely to the study of the factors governing the behavior of fruits of various kinds while in transit from the orchard to market, while held in storage, and while held in the markets awaiting final sale to consumers. Primarily, this work has shown that there exists a definite relationship between the system of preparing a fruit product for market, the care with which the operations are carried on, the system of shipment, refrigeration and handling, and the condition of the product upon its arrival at final destination. The problems of the successful marketing of fruits are largely problems of wide distribution, in which are involved many questions pertaining to methods of organization, methods of shipment, and systems of marketing and selling. The investigation of these problems necessarily has dealt with all agencies concerned in the progress of the fruit crop from the orchard to the consumer, including the grower, packer, shipper, transportation line warehouseman, market receiver, buyer and seller.[52]

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[50] "Department Conference on the Marketing and Distribution of Farm Products," U.S.D.A., typewritten report, dated March 27, 1913, pp. 1–2. A copy of this report (65 pages) is in the U. S. Department of Agriculture Library.

[51] "Marketing and Distribution," pp. 2–16.

[52] "Marketing and Distribution," pp. 17–18.

The investigations were primarily of a physical and biological character, but so important in solving marketing problems that it was evident that these phases, as well as the human relation aspects, needed to be investigated.

J. W. T. Duvel, Bureau of Plant Industry, read a paper on "Grain Standardization and Its Relation to Marketing Conditions." He said, in part:

> Our grain standardization investigations are being carried on with the view of securing definite and reliable data which can be used in the fixing of uniform standards for the grading of commercial grain throughout the United States. This work was organized several years ago primarily as a result of the numerous complaints from European buyers of American grain concerning the poor and inferior quality of grain delivered under terms of American "Certificate final." An investigation showed that the complaints of the European importers were very conservative. Europe is receiving annually hundreds of thousands of bushels of inferior and damaged grain, some of which is improperly certificated at point of shipment, although a considerable percentage becomes damaged during transit. On the other hand, were the grain in proper condition at time of loading into the vessel the damage resulting from the deterioration during transit would be extremely small. That is, barring cases where the grain is stored against bulkheads, etc. This condition has been brought about mainly by the keen competition between the various export markets. In the absence of uniform methods of inspecting and grading grain in the various markets there is a strong temptation to meet this competition by a far too liberal system of grading. As a result of these deplorable conditions, European buyers are looking to the other markets for their supply of grain. American grain is being discounted to take care of these heavy losses, all of which reflect back to the producers of good grain.[53]

Duvel then described the work which was being carried on with a view to establishing and administering uniform grades and standards for grain.

> . . . with few exceptions grain is bought [at the local market] simply as grain at a specified price per bushel regardless of its intrinsic value. . . . In the case of wheat they usually make a slight difference, but in corn and oats they make no difference. It all brings the same price.
>
> Sufficient data are now available to justify the fixing of definite grades for corn and it is proposed to establish such grades during the coming year, if possible in time so that they will be available for the marketing of the 1913 crop. It is believed that the standardization of corn grades will put into the hands of the producers the necessary information so that they can determine for themselves with a reasonable degree of certainty the commercial grade of any given lot of grain intended for market.[54]

Assistant Secretary of Agriculture, B. T. Galloway, formerly Chief of the Bureau of Plant Industry, supplemented Duvel's statement by saying:

> For the past six or seven years efforts have been made from time to time to have the Government take up the question of grain grading, establish its

[53] "Marketing and Distribution," pp. 39–40.
[54] "Marketing and Distribution," pp. 44–45.

agents at all the grain centers and take charge of the great problem of grain grading, all of which would cost a great deal of money. We have been working rather with the idea of formulating the different factors, so that the commercial agencies could do that work themselves under Government supervision. We have reached that point with respect to corn. Dr. Duvel has worked out the factors which he thinks should enter into the corn grade. The dealers will probably fall in with this plan. The next problem will be to take up some other grain.[55]

To this Duvel added:

The Grain Dealers' National Association, Boards of Trade, Farmers' Grain Dealers Associations, Chambers of Commerce, National Granges, Grain Exchanges, and other associations in many parts of the country have approved the plan of the standardization of grain by the Department. . . .

A good deal of the criticism, however, of present methods and of the desire for Government standards goes back to the honesty of the commercial organizations. The honest dealers realize that they have to do a dishonest business in order to compete with the dishonest men in the trade, and for that reason they are strongly in favor of the standardization of grain by the Department.[56]

The fifth and last paper was presented by Charles J. Brand. It dealt with the co-operative cotton handling and marketing work in the Bureau of Plant Industry. That paper considered the economic as well as the biological aspects of the subject:

In March, 1912, after a series of conferences, the Chief of the Bureau of Plant Industry [B. T. Galloway] authorized the establishment of a new project to be known as The Farmers' Cooperative Cotton Handling and Marketing Project. The primary object of the work as outlined by the Chief of the Bureau was to study the present system of ginning, handling, grading, baling, and marketing cotton, with a view to improving the same through educational and demonstrational methods, and by cooperation with growers' associations and otherwise to make the results of the investigations conducted effective. . . .

A further object of the establishment of the project was to coordinate the work of the offices of Cotton Standardization, Cotton Breeding, and in a measure the Farmers Cooperative Demonstration Work in order to furnish a definite channel through which the investigational work of these offices might be brought home to the farmer in practical form.

The problems involved have been and are being approached by cultivating personal familiarity with all the mechanical and commercial processes through which the bulk of the crop, both seed and lint, now passes; by actually inspecting every new device and process for the improved handling of cotton and cotton seed; and by advocating organizations and community action in cotton growing and marketing and assisting in making such organizations successful.

The following activities were taken up immediately upon the establishment of the project:

1. The devising of a simple form of cooperative organization which might prove acceptable to communities of growers and not have the objection of requiring the subscription to considerable amounts of stock.
2. The compilation by a competent law clerk of the cotton ginning, compressing, and warehousing laws of the various States.

[55] "Marketing and Distribution," p. 45.
[56] "Marketing and Distribution," pp. 45–46.

3. A preliminary survey of freight rates on cotton from various points of production to certain ports and markets.
4. A general survey of cotton handling mechanisms, including cleaning attachments, gins, gin compresses, and the like.[57]

Brand summarized his ideas in this fashion:

Object of the Work

The object of the work is to assist in the organization of responsible cooperative associations of cotton growers with the distinct purpose of helping them to produce a more valuable product and to secure what it is really worth, and in addition to bring about improvement in present methods.

How We Hope To Attain Our Object

1. By insisting on the production of a single variety for each community so that seed mixing at gins may be eliminated and a lucrative trade in pure seed at once be established; the demand for good seed now outruns the supply.
2. By organizing units of such size that the products can be sold in commercial lots of uniform grades and qualities. The marketing of cotton is a process of *concentration* and not of *distribution*. The larger the producing unit, the more economical the marketing.
3. By improvements in ginning practices and the introduction of the gin compress so that cotton may be fully prepared for the mill before leaving the grower's control.
4. By a form of organization which will establish the responsibility of the associations and protect spinners or cotton merchants who deal directly with them. We hope eventually that these associations will operate their own oil mills and sell cooperatively all by-products of their surplus seed.

What We Need

To bring about these reforms and other more general improvements we need:

a. Exact information as to present market conditions and practices in order that the points of waste and abuse may be definitely located and as far as possible corrected or removed. This we are obtaining by widely extended inquiry and by establishing personal contacts with every branch of the industry, and particularly by a system of primary market surveys, the first of which we carried out this year.

b. We need and are obtaining information as to the consumption in this country of staples of various lengths, so that we may intelligently advise cooperative communities what varieties to grow, and where they are consumed.

c. We need final knowledge as to the spinning value of varieties when bred pure and handled properly and are beginning a series of waste and spinning tests to determine these differences.

d. We need a net weight contract to encourage a style of baling which will improve our bale in appearance and prevent attempts to sell ragged jute for cotton, and have experiments now under way to determine the possibility of standardizing tare on the ordinary cotton bale, and to reduce the size of the present city crop.

[57] "Marketing and Distribution," pp. 47–49.

e. We need and are obtaining information on the behavior of seed cotton in storage, so that whatever beneficial results can be obtained by such storage can be put within the reach of growers' associations. We are studying temperatures developed, the effect on germination of seed and on chemical and physical condition of the cotton.

f. We must take up the entire problem of seed handling and the manufacture of oil and seed products accumulating all data necessary for the successful operation of oil mills by organized communities.

Finally, to make all these activities and investigations of greatest practical benefit, we must maintain close touch with each society organized, our representative attending all meetings and guiding the affairs of the organization during the formative and experimental period.

Success will finally hinge on the extent to which we actually assist in selling the cotton and for this reason we should have a charter of wide scope from the Department, and should have every possible assistance in securing such modifications of or additions to the official grades as will secure their universal adoption in the trade, and make them include or provide for many low grade qualities not now officially recognized. We could then handle the greater part of the short cotton crop on descriptions definitely standardized and mutually understood. For staple cottons more definite descriptions must be evolved and adopted, and meantime selling on type will be encouraged and variations reduced to a minimum by seed breeding and field selection from improved stocks. There has been a disposition in the Department to avoid anything like an official certification of cotton, but our work is bringing us rapidly to the point where we must do this or admit our inability to secure the farmer the real value of a superior product after he has produced it under our auspices or handled it under our direction.[58]

Secretary Houston asked Brand many questions and then closed the meeting with this statement:

I suppose it is too early to discuss effectively just how we can coordinate these lines of work with the work to be undertaken by the Division of Markets. . . . In the near future this may involve the whole question of rural activity, cooperation in these various directions, and it will be very important to bring the results of this work together so as to assist those who are to direct the marketing and the various cooperative enterprises and so as to make it unnecessary for them to go over the same ground again. It will give them a very clear indication of the methods pursued in a number of directions. The best way of doing that, of course, I can not suggest. We will have to discuss it. Sooner or later we will have to organize a larger staff to undertake it.

That seems to be about all we can do this morning.[59]

A month later, on April 29, 1913, Secretary Houston called another conference to which "some of the leading experts and students in this field" were invited. As stated in the notice, the purpose was to "secure the views of experts and others in the problem of organizing and conducting a marketing service in the Department of Agriculture."[60] In opening the conference the Secretary said:

. . . [the provisions of the act appropriating funds for marketing work] suggested a tentative division of the subject into four groups:

[58] "Marketing and Distribution," pp. 58–61.
[59] "Marketing and Distribution," p. 65.
[60] U.S.D.A., Office of the Secretary, "Organization and Conduct of a Market Service in the Department of Agriculture," discussed at a conference held at the Department on April 29, 1913 (Washington, 1913), p. 1. This publication is unnumbered.

1. Organized marketing, which will include studying and aiding existing organizations for marketing farm products, the promotion of such markets, and the study of State and national laws affecting organized production.
2. Marketing news service, the work along this line for the time being to consist mainly of an investigation of the practical methods and cost of conducting such a service, and later, if found feasible, to include the daily collection and distribution of information relating to supply and demand in the leading markets, progress of planting and area planted, and condition of growing crops.
3. Methods and cost of distribution, which will include a study of prices paid the producer, changes of ownership between producer and consumer, prices and profits at each stage, and final price paid by consumer.
4. Transportation problems of specific localities, which will include the delivery of products to local consumers and shipment to distant markets.[61]

The Secretary then called upon G. Harold Powell, formerly of the Department, but for some time General Manager of the California Fruit Growers' Exchange, to tell the group of the experience of that Exchange and to give his ideas as to the work which should be undertaken by the U. S. Department of Agriculture. Powell summarized his suggestions:

1. Determine the principles on which farmers' business organizations can be successfully founded and operated.
2. Work out the principles of law which should be incorporated in State and Federal legislation and which would permit the proper organization and conduct of farmers' associations.
3. Study the distribution of farm crops as practiced by farmers' organizations and other agencies in order to determine the weaknesses, the wastes in distribution, the abuses and extravagances of the distributing system, and illegal practices, if such exist, and as a result set forth the principles of State and Federal legislation which would define the functions of the various distributing agencies, correct such abuses as legislation can reach, define and set forth the principles of cooperative organization, and assist the farmers in the formation of their organizations.
4. Help the farmers after they are organized to develop a system by which they can secure for themselves better information regarding crop conditions, the movements of crops, the supply in different markets, and the daily prices, this information to supplement the general data which the department may furnish the public.
5. Investigate the methods of handling, grading, packing, and preparing farm crops for market, to bring about a greater uniformity and to correct the abuses which now cause a large proportion of the trouble in the dealings of the producer with the distributing agencies.[62]

The parcel post as an agency to be used in marketing farm products was discussed by Congressman D. J. Lewis, who prepared the House parcel-post bill. He suggested "that the department undertake an investigation of the extent to which a fully developed parcel post might lend itself to the great project of marketing farm products and study in detail the subject of packing at the farm for such transportation."[63]

[61] "Organization and Conduct," pp. 1–2.
[62] "Organization and Conduct," p. 12.
[63] "Organization and Conduct," p. 15.

The Bureau of Markets

Secretary Houston, with the encouragement of interested persons both within and outside the government, created the Office of Markets and appointed Charles J. Brand Chief on May 16, 1913. Congress officially recognized the Office in 1914 in the appropriation bill for the year ending 1915. The Office was set up as an independent agency reporting directly to the Secretary.[64]

Houston had grasped the significance of this new undertaking. He must have reflected that to place the marketing work in the Bureau of Statistics or in the Bureau of Plant Industry, under bureau chiefs whose primary interests and basic training fitted them especially for their major undertakings, would not give the new Office that opportunity which was essential to the greatest success. The work to be done was basically economic. The chiefs of the other bureaus were not economists. Secretary Houston was an economist and took the new office under his own wing. In his first report Houston made a statement concerning the marketing of farm products:

> In dealing with the problems of production, the department has directed its attention mainly to the problem of the individual farmer, and the broader economic problems of rural life have received relatively little attention. It is now becoming clear that we must definitely and aggressively aproach these newer and, relatively speaking, urgent problems. We have been suddenly brought face to face with the fact that in many directions further production waits on better distribution and that the field of distribution presents problems which raise in very grave ways the simple issue of justice. That under existing conditions in many instances the farmer does not get what he should for his product; that the consumer is required to pay an unfair price; and that unnecessary burdens are imposed under the existing systems of distribution, there can be no question.
>
> Just what part of the burden is due to lack of systematic planning, or inefficiency and economic waste, or to unfair manipulation, one can not say. As difficult as are the problems of production, they are relatively simple as compared with those of distribution, and there is danger not so much that nothing will be done, but that pressure will be brought to bear on the department to take action everywhere before it is prepared to act intelligently anywhere. The department has given assistance here and there in the past; it is prepared to give further assistance and information now, and it has shaped its projects and instituted more systematic investigations, which should have results of great practical value to individuals and to communities.
>
> This extension of activity has been made under the act of Congress approved March 4, 1913, which confers the broad authority indicated:
>
> "To enable the Secretary of Agriculture to acquire and diffuse among the people of the United States useful information on subjects connected with the marketing and distribution of farm products."
>
> Let us look at the matter briefly and consider some of the problems that must be attacked in this field. The department has arranged its marketing investigations under five important subdivisions:

[64] For more details and citations to documents, see Caroline B. Sherman, "The Legal Basis of the Marketing Work of the United States Department of Agriculture," *Agricultural History*, 11:289–301 (October 1937).

First. Marketing surveys, methods and costs, including especially available market supplies in given production areas, demand at consuming centers, cold and other storages, marketing systems and prices, and costs of wholesale and retail distribution of farm products.

Second. Transportation and storage problems, having in mind the elimination of waste and the study of problems connected with surplus market supplies; terminal and transfer facilities, including freight congestion, car supply, deterioration in transit, extension of the practice of precooling of perishable products, and other special services.

Third. City marketing and distribution investigations, involving a study of the uses and limitations of farmers', municipal, wholesale, and retail market houses; systems of city distribution; the promotion of direct dealing between producers and consumers by parcel post, express, and freight.

Fourth. Study and promulgation of market grades and standards. A consideration of sizes and suitability of packages and containers, methods of preparation of perishable products, and the ultimate establishment, so far as practicable, of official market grades and standards for farm products.

Finally, cooperative production and marketing investigations. The department, as has been said, has already approached the field of marketing through various agencies. It has established standard cotton grades and has practically completed its standard corn grades. It has given much attention to cold-storage problems and to the packing and handling of perishable fruits. It is aware of the existing chaos and of the consequent wastes—waste resulting from faults on the part of the farmer in the growing and handling of his products; waste resulting from the machinery of distribution, including physical equipment and physical handling; waste resulting from the manipulation of those middle men who perform no clearly useful and necessary service; and waste resulting from ignorance on the part of the consumer and of the producer of the character of the product which is placed on the market. The producer of any product is entitled to receive an exact price for the specific product which he offers and the consumer is entitled to receive just the commodity he thinks he is paying for.

A failure in either direction involves clear injustice and greatly hampers production and crop improvement. Let me illustrate by reference to two vitally important crops—cotton and corn.

Several different standards of cotton classification are now in use. Some markets have adopted the official grades and use them. Others have adopted them, but do not trade on them. Liverpool has one set of grades, New York another. The former is a great market for both spots and futures; the latter almost purely a future market. Atlanta has its own grades; Augusta's are different. Savannah, handling largely the same character of cotton as the two foregoing, trades on Liverpool grades, using Liverpool middling as a basis. Atlanta middling is equal to Liverpool good middling. In other words, at the present time the same grade name is applied to two qualities that differ in market value as much as $2.50 per bale.

The adoption and application of one uniform standard would result in a great simplification of all cotton transactions, doing away with the complex method of figuring buyer's limits. It would not be sufficient to have uniform grades, but the grade selected as the basis grade should be the same in all markets.

The local buyer knows the market cotton grades; the farmer does not. Too frequently the local buyer secures the cotton at practically a flat-rate basis on lower grades, grades the cotton himself, and sells it for what it is worth.

There is not only no incentive for placing a good product on the market, but as a matter of fact a penalty attaches to the cotton grower who takes the pains to improve his product.

Uniform standards throughout the cotton belt would result in the rapid building up of a body of common knowledge on the part of the farmers, students in agricultural colleges, and others interested in the universal set of grades. We might hope to educate cotton farmers in sufficient detail to enable them to use one set of grades, but it would be difficult, if not impossible, to teach them grading based on a number of diverse standards, as one can never tell to what market a given lot of cotton is to go. It would be necessary to have knowledge of practically all grades in use.

If in addition these grades were used on the exchanges and the terms of the contract employed were modified, many of the evils complained of by the producer and the consumer in the marketing of cotton would disappear.

Practically the same results would follow and the same evils would be removed if standard grades for corn were universally adopted. . . .

Cooperation. . . . It is clear that before the problems of marketing, the individual farmer, acting alone, is helpless. Nothing less than concerted action will suffice. Cooperation is essential. The same business sense and the same organizing genius which have placed this Nation in the front rank in industry must be invoked for agriculture. Reflection suggests this; experience demonstrates it. All the successful attempts in the marketing of any produce anywhere in the world have come through organized effort. The individual farmer has neither adequate information nor the facilities.

There are dangers here, of course. *Cooperation can not result in an organization which shall attempt to establish a closed market and to fix prices.*[65] We shall doubtless condemn this as strictly in one field of industry as in any other and it would be as unnecessary as it would be unfortunate. The aim should be an economic arrangement which shall facilitate production, lead the producer to standardize and to prepare his product for the market, and to find the readiest and best market for his product. Such action will result in gain to the producer as well as to the consumer. *Furthermore, it is desirable that such concerted action shall proceed from below upward.*[66] It must concern itself with the overcoming of a specific economic difficulty in this field of production and distribution. It should associate itself with some particular product which is capable of being standardized. Experience shows that the best results are secured only when the members of such a cooperative society are those who are bona fide producers.[67]

Italics have been supplied for two statements by Houston on co-operation because those two ideas became issues in the 1920's when the effort was made to control prices through co-operative organizations built from the top down.

With the small appropriation of $50,000 that was available, Brand went to work. His earnest efforts, his courage, and energy brought amazing results. In summarizing the history of the period, Caroline B. Sherman said:

A definite program was evolved along the general lines previously considered, but outlining several distinct lines of attacking the problem at hand: cooperative marketing; surveys of supply and demand; study of methods and cost of distribution; study of transportation problems; in-

[65] Italics ours.
[66] Italics ours.
[67] U.S.D.A., *Annual Reports,* 1913 (Washington, 1914), pp. 21–25.

vestigation of practicability, methods, and costs of a general news service; and cotton handling and marketing investigations. The last item provided for continuing certain work that was already well advanced in the Department.

. . . By the beginning of the calendar year 1914 definite work along promising lines was well under way.

The first annual report of the Chief of the Office of Markets indicated some rather tangible results, notably in the work with the cooperative cotton associations and in the amount of valuable information that had been gathered.[68] These data related to the extent and activities of producing areas of specified products, and the shipments, destinations, and prices at terminal markets, city marketing conditions, cooperative marketing activities among farmers, the possibilities of marketing farm products by parcel post, and similar subjects. It was being disseminated through correspondence with the public. Three bulletins and various short articles had been published and other bulletins were in press.[69]

The appropriation for the Office for the year ending June 30, 1915, was $200,000,[70] or four times as large as the allotment of funds for this purpose the previous year.

In 1915 the administration of the cotton futures act, approved by the President and carrying a continuing appropriation of $150,000, was entrusted to this Office under the direction of the Secretary[71]. . . . During this same year the Office, on the basis of its own investigations, successfully operated a market news service on certain fruits and vegetables. This service was enthusiastically received by growers, shippers, and the produce trade. . . .

The agricultural appropriation act for the fiscal year 1917 included as parts B and C the grain standards act and the warehouse act and was signed by the President on August 11, 1916.[72] On August 31 the standard container act was also approved.[73] All of these new laws were assigned to the Office of Markets and Rural Organization[74] for administration, thereby greatly increasing its work. The conscientious exercise of the police powers conferred by these laws, particularly the one relating to grain, even though conducted as nearly as practicable as an educational enterprise, brought some measure of unpopularity in certain adversely affected quarters. This opposition increased the difficulties but did not lessen the endeavors of the Office. The grain standards act carried a continuing appropriation of $250,000, the warehouse act $50,000, and the regular appropriation for the Office for this fiscal year was $872,590. Thus the total amount for the year to be expended under the direction of the Office was $1,172,590. . . .

During these years certain lines of work related to marketing which had been started in other bureaus of the Department were transferred to the Office of Markets and Rural Organization. These included investigations

[68] U.S.D.A., *Annual Report,* 1914 (Washington, 1914), pp. 317–27.
[69] C. B. Sherman, "The Legal Basis of the Marketing Work of the United States Department of Agriculture," *Agricultural History,* 11:296–97.
[70] U.S.D.A., *Annual Reports,* 1915 (Washington, 1916), p. 363.
[71] *U. S. Statutes at Large,* 38(1):693–98. (In Chap. 255.)
[72] *U. S. Statutes at Large,* 39(1):482–91.
[73] *U. S. Statutes at Large,* 39(1):673–74.
[74] The change in title came about as follows: The work of rural organization, affiliated with the U. S. Department of Agriculture during the fiscal year 1913–14 under the leadership of T. N. Carver, was provided for by the Federal appropriation for the Department for the fiscal year 1914–15. Carver returned to Harvard University and the Secretary of Agriculture combined the rural organization work and the Office of Markets under the designation "Office of Markets and Rural Organization." That action of the Secretary was given legal sanction in the appropriation act providing funds for the fiscal year 1915–16. See Sherman, "The Legal Basis of the Marketing Work . . . " pp. 297–98. See also U. S. Department of Agriculture, *Annual Reports,* 1915, p. 363.

pertaining to cotton standards and testing, handling and transportation of grain and determination of grain standards, and preservation of fruits and vegetables, which were transferred from the Bureau of Plant Industry. . . .

The Office of Markets and Rural Organization formally became a Bureau through the agricultural appropriation act for the fiscal year ending June 30, 1918, approved March 4, 1917, which provided $1,718,575 for the Bureau of Markets under that name. . . .[75]

Thus in 1918, just five years after the beginning of its work, the Bureau of Markets took its place among the largest bureaus of the Department of Agriculture. Signal progress had been made along such fundamental lines as standardization, collection and dissemination of market information on a nation-wide basis, improvement in preparation of farm products for market, improvement of transportation conditions including methods of loading and refrigerator car service, and determination and promulgation of the basic principles of successful cooperation. The Bureau of Markets had succeeded in convincing all thoughtful persons, and, to a perceptible degree, the general public, that careful investigation is basic to any far-reaching improvement in our complicated market conditions. People were beginning to realize that no single method, plan, or device could bring about revolutionary improvements in the order of things, but that efficient utilization of the part of each method and procedure that promised the best results under given conditions would gradually bring about a wise distribution of farm products with stable profits to the farmers and more reasonable prices to the consumers.[76]

Charles J. Brand resigned in June, 1919, to enter private business in the field of marketing.[77] George Livingston succeeded Brand first as Acting Chief, then as Chief, of the Bureau of Markets. In his report for the year ending June 30, 1920, Livingston said:

Deep interest in current questions involved in the marketing of our agricultural products is manifested in all sections of the country. . . . There is a deep-seated dissatisfaction in many quarters on account of the apparently faulty functioning of our marketing machine, and a great deal of criticism arises because many people seem to feel that nothing effective is being done. . . . One of the important fundamental problems confronting marketing agencies is the education of the public to a point where it will generally realize that the present marketing system is a product of evolution; that improvements must be made gradually by changes in method and procedure and by eliminating specific recognized evils. . . .

Ever since its institution, the Bureau of Markets has realized that certain objects must be accomplished before any generally noticeable marketing improvements could be made. Standards for farm products and the containers in which they are packed must be established; prompt, accurate, and disinterested domestic and foreign market information must be made available to all parties concerned in the process of distribution; impartial inspection must be maintained; the problems inherent in the organization and operation of farmers' cooperative organizations must be solved; the business practices of the various marketing agencies must be improved; accurate and complete data concerning the cost of marketing must be available; and efficiency in handling, storing, and shipping farm products must be increased. In all these directions measurable progress has been made. . . .[78]

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[75] *U. S. Statutes at Large,* 39(1):1162–63.

[76] C. B. Sherman, "The Legal Basis of the Marketing Work of the United States Department of Agriculture," pp. 298–301.

[77] U.S.D.A., *Annual Report,* 1919 (Washington, 1920), p. 427.

[78] U.S.D.A., *Annual Report,* 1920 (Washington, 1921), pp. 531–32.

20.

Marketing Work in Agricultural Colleges Prior to 1921

THE SAME AWAKENING OF PUBLIC INTEREST in higher prices for farmers and lower prices for consumers which led to the creation and rapid growth of the Bureau of Markets in the U. S. Department of Agriculture, led to the introduction of research and teaching of agricultural marketing in universities and agricultural colleges.

Illinois

Eugene Davenport, of the University of Illinois, had opened the gate and entered the field of agricultural marketing at the beginning of the twentieth century. He made no attack upon middlemen but undertook to teach farmers what kinds and grades of livestock to produce in order to obtain the best prices in the market. In 1901 he issued a bulletin on the market classes of horses.[1] The next year Herbert W. Mumford published an illustrated bulletin on market classes and grades of cattle.[2] These bulletins were followed in the next few years by several other market studies.[3] These included a bulletin on city milk supply and one on market classes and grades of swine.

In an effort to answer the question, "Would it be more profitable to market corn as early as possible after husking time, or is it profit-

[1] E. Davenport, "The Market Classes of Horses," Illinois Agr. Exp. Sta. *Bulletin* 62 (Urbana, 1901).

[2] H. W. Mumford, "Market Classes and Grades of Cattle With Suggestions for Interpreting Market Quotations," Illinois Agr. Exp. Sta. *Bulletin* 78 (Urbana, 1902). While still at Michigan, Mumford had published a bulletin that showed his breadth of vision in considering the economics of the sheep industry. The bulletin was in reality a pioneer "outlook" report. See H. W. Mumford, "The Production and Marketing of Wool," Michigan Agr. Exp. Sta. *Bulletin* 178 (Agricultural College, 1900).

[3] Illinois Agr. Exp. Sta. *Bulletins* (Urbana):
W. J. Fraser, "City Milk Supply," *Bulletin* 92 (1903).
W. Dietrich, "Market Classes and Grades of Swine," *Bulletin* 97 (1904).
A. N. Hume, and O. D. Center, "The Shrinkage of Ear Corn in Cribs," *Bulletin* 113 (1907).
J. M. Trueman, "Milk Supply of Chicago and Twenty-Six Other Cities," *Bulletin* 120 (1907).
R. C. Obrecht, "Market Classes and Grades of Horses and Mules," *Bulletin* 122 (1908).
J. W. Lloyd, "Marketing the Muskmelon," *Bulletin* 124 (1908).
W. C. Coffey, "Market Classes and Grades of Sheep," *Bulletin* 129 (1908).
L. D. Hall, "Market Classes and Grades of Meat," *Bulletin* 147 (1910).

able to hold it?" two men, who were assistants in crop production, issued a bulletin on the shrinkage of ear corn in cribs. A bulletin on the milk supply of 27 Illinois cities described methods of handling milk, its butterfat content, amounts of sediment and conditions essential to the production of clean milk. In 1908, a new illustrated bulletin on market classes and grades of horses and mules dealt with the qualities that determine the price of animals in the market. The beginning of work on the marketing of fruits and vegetables was a study of the marketing of the muskmelon, which stated:

> . . . After a brief consideration of the market demands in reference to types of melons and packages, the most approved method of handling the crop is given in detail, including picking, grading, packing, the construction of packing sheds, and the organization of the working force. This is followed by a discussion regarding various methods of selling the crop.[4]

A bulletin on market classes and grades of sheep and one on market classes and grades of meat wound up the first decade of the twentieth century at the University of Illinois with ten bulletins on marketing of farm products, all written by men whose primary interests were in the physical and biological aspects of plant and animal production, but who had become market conscious and realized that production must be guided by market demands. A common characteristic of that work on marketing was the effort to tell the farmer the type of product that was prized on the market. Of those pioneer contributions from the University of Illinois, the one by Mumford discussing market classes and grades of cattle was outstanding in importance. It created the standard later adopted for the market news service of the U. S. Department of Agriculture. Mumford said to the beef cattle producers:

> When practicable follow your consignments to the market — find out the desirable and undesirable characteristics of your cattle from the standpoint of the market.
>
> Observe other cattle on the market and compare their quality, condition, conformation, and the prices paid for them with the quality, condition, conformation, and price of your own cattle with which you are more familiar.
>
> Compare prices for which various lots of cattle have been sold with market quotations, and note what grade of cattle is bringing similar prices. . . .
>
> When cattle grade the best of their class they command a premium on the market. Such cattle usually sell at strong prices and for their full value.
>
> Cattle of the lower grades, necessarily deficient in certain particulars, sell at a discount which in many instances is greater than their inferiority demands. . . .
>
> Variations in quality, condition, weight, and age of cattle reaching the Chicago market make it necessary to establish certain classes and grades in order to report market conditions intelligibly through the public press. . . .
>
> It is evident that the value of a thorough knowledge of the various market grades of cattle is not fully appreciated by a majority of the feeders

[4] Lloyd, "Marketing the Muskmelon," *Bulletin* 124, p. 295.

and breeders of beef cattle. Without a thorough understanding of market and feed lot requirements the feeder is groping in the dark. . . .

Those most familiar with the cattle trade agree that there often exist wide differences between the actual selling price of cattle in the market and the previous estimate by the feeders sending them forward as to the prices they should bring. The small feeder, who seldom follows his cattle to market, has a poor chance to learn market conditions and requirements, but the regular shipper has an excellent opportunity to do so. Feeders must rely largely upon the market reports for their knowledge of the condition of the cattle trade. Market reports will always be more intelligible to readers who are thoroughly familiar with stockyards vernacular than to those who seldom visit them; hence, the desirability of frequent visits to the market. Inability on the part of the feeder to interpret correctly market quotations places him at a decided disadvantage either in selling his cattle to a shipper or in shipping to the open market. The hope that this bulletin will aid cattle feeders and also those without experience about to engage in the business of breeding or feeding beef cattle on an extensive scale inspired this attempt to classify and explain the various market classes and grades of cattle. . . .

It is hoped that this bulletin will demonstrate the importance of this subject in a way that will influence many to make a careful study of market conditions and lead all to look upon a study of the market as of great importance in the production of meats generally; for what is true of the beef cattle market is also true to a large extent of the sheep and hog markets. . . .

This bulletin is the result of an investigation of the subject by the author at the Union Stock Yards, Chicago, where every opportunity was afforded and every possible courtesy extended by the officials of the Union Stock Yards and Transit Company, Live Stock Commission Companies, and by representatives of the Live Stock Journals. Forty-five of the engravings used in illustrating this bulletin were made from photographs taken in the Chicago Union Stockyards, forty of which were taken especially for use in this work.[5]

The Universities of Minnesota and Wisconsin started research in marketing about the same time. The University of Wisconsin set up a Department of Agricultural Economics in 1909.

Minnesota

The University of Minnesota created a Bureau of Research in Agricultural Economics in 1911. This action took effect February 1, 1912.[6] The primary purpose of the new bureau was set forth by the Director of the Experiment Station, Albert F. Woods:

Because of the peculiarly pressing problem presented by external economics affecting the value of products from the time they leave the farm until they reach the consumer, immediate attention is being devoted to certain aspects of the marketing and distribution of farm products with a view to studying the comparative value of the different agencies performing the function of the middleman. The situation in different parts of Minnesota is subjected to special inquiry. Data are being gathered bearing on marketing and distribution in other states and in foreign countries so far as such information may be of value in relation to conditions in this State. Separate studies are made for different kinds of farm products, as perishable crops and

[5] H. W. Mumford, "Market Classes and Grades of Cattle," *Bulletin* 78, pp. 368–72.
[6] Minnesota Agr. Exp. Sta. *Annual Report,* 1912 (University Farm, St. Paul, 1913), p. xxxvi.

staple products such as wheat, whose marketing problems are somewhat different. What economic functions must be performed in each case and what mechanism is best adapted to this need is what we shall try to throw light upon as a result of our investigation. In the comparison of various methods employed, attention is devoted to the achievements of various kinds of co-operative effort in this field. By a comparative study of different types of organization, we hope to learn just what sort of co-operative effort may be expected to be successful. We are taking up the problems connected with the distribution and sale of all the important farm products such as fruits, vegetables, milk, butter, eggs, meats, cattle, and hogs, and the leading grains produced in Minnesota.[7]

The Bureau was not organized exclusively for research in marketing. Credit, land problems, and community life problems were mentioned in the Director's report as other fields to be studied. The work in farm management, which had been in process of development under Hays and Boss, was not included in the work of the Bureau. Carl W. Thompson, the first Director of the Bureau,[8] left for a similar position in the U. S. Department of Agriculture in early 1913. But before he left Minnesota he had prepared a bulletin on egg marketing.[9] That study outlined in general terms the evolution of the system of egg marketing and stressed the significance of modern transportation and cold storage in the expansion of the market for eggs produced by Minnesota farmers. After Thompson left Minnesota in 1913 and Weld was appointed Chief, the Division was occupied largely with work relating to co-operation.[10]

Wisconsin

The University of Wisconsin had made important contributions to marketing problems prior to 1900. As wheat and sheep declined in importance and dairy cows became the important source of income to Wisconsin farmers, butter making was moved out of the farm house into the creamery. That was an essential step toward a standardized quality of butter acceptable in the city market, but it brought with it the problem of paying the farmer for cream on the basis of fat content. Dean W. A. Henry was alert to the importance of that problem and stimulated the chief chemist of the College of Agriculture to invent the Babcock Test. That invention provided a relatively simple method of determining the fat content of milk and cream delivered to the butter factory. It made possible a just system of compensating the farmer for his product and proved to be a practical method of discouraging dishonest practices on the part of farmers and creamery managers. A training school for butter and cheese makers was another contribution made by the University of Wisconsin that

[7] *Annual Report,* pp. xxxvi–xxxvii.

[8] Before June 30, 1913, C. W. Thompson had gone to Washington, the designation had been changed from "Bureau" to "Division," and L. D. H. Weld had been appointed Chief. See Minnesota Agr. Exp. Sta. *Annual Report,* 1912–1913 (University Farm, St. Paul, 1914), p. 65.

[9] C. W. Thompson, "Studies in Egg Marketing," Minnesota Agr. Exp. Sta. *Bulletin* 132 (University Farm, St. Paul, 1913).

[10] Cf. *infra,* pp. 653–et seq.

did much to improve and standardize the quality of both butter and cheese and thus enhance the price for which those products could be sold.

By 1910 the College of Agriculture had recognized the interest of Wisconsin farmers in the activities of middlemen and the prices of farm products by asking H. C. Taylor to discuss these subjects on the program of Farmers' Week in the winter of 1910–11.[11] To the farmers who had been excited by the agitations of the American Society of Equity, Taylor's talk seemed overconservative. Men at the University of Wisconsin may have been conservative, but they sought to create understanding rather than to promote hasty action. There were those under the capitol dome at Madison who recognized the political possibilities of the Equity movement and who were ready for active response. The master mind in the state capitol in those days was that of Charles McCarthy. By 1901 McCarthy had taken his Ph.D. degree at the University of Wisconsin and had accepted a position as Legislative Reference Librarian in the Wisconsin state capitol. Tradition has it that he said of that appointment, "The professors at the University thought they would pigeonhole me, but I decided that I would show them the importance of the new position." And there is no question of his success in doing so. McCarthy soon developed what was known as the "Bill Shop," where competent experts prepared bills, which may or may not have been suggested by some member of the state legislature, but which, of course, were always presented to the legislature by some member of that body. One of the bills prepared in the "Bill Shop" created the Wisconsin State Board of Public Affairs[12] in 1911. McCarthy had no official connection with the Board, but he was a dominant influence in determining its diverse lines of activity. Through the Board McCarthy brought much pressure to bear upon the University of Wisconsin with regard to work in the field of agricultural co-operation and marketing. That pressure proved to be helpful in obtaining funds to expand marketing work at the University.

Taylor's proposal at that time was that two or three young men be employed to help with the marketing studies, pending the time when the right person could be found to do the research and extension work in agricultural co-operation and marketing. By the beginning of the second semester of the year 1911–12, that proposal was accepted. William A. Schoenfeld and George S. Wehrwein, both seniors in the College of Agriculture that year, were employed part-time during the second semester and full-time during the following summer to study the marketing of Wisconsin cheese. Wehrwein was to study the organization of the production and local marketing of

[11] Cf. *supra*, pp. 488–90.

[12] The first members of that Board were: Governor F. E. McGovern, W. H. Hatton, W. H. Hanchett, John Humphrey, A. W. Sanborn, R. J. Nye, J. A. Frear, and R. A. Campbell (Secretary).

cheddar cheese in east central Wisconsin, with special attention to the price-making activities of the Plymouth Cheese Board. Schoenfeld was asked to discover where Wisconsin cheddar cheese was consumed and through what channels it passed from producer to consumer.

Wehrwein was successful in winning the confidence of farmers, cheese makers and men in the cheese trade so that the facts were made available to him. He discovered that most of the cheese in the area surrounding Plymouth was manufactured by cheese makers in their own factories, that each farmer near a factory delivered his milk to the cheese maker who agreed, for a fixed charge of one and one-half cents per pound of cheese, to manufacture the milk into cheese and sell the product. The total amount received for the cheese produced in a given month, minus charges for materials and services, was divided among the patrons on the basis of the pounds of milk delivered. He found also that less than ten per cent of the cheese was sold on the Cheese Board and that most of it was contracted for in advance by agents of the cheese distributors, on the basis of the Plymouth Board prices, yet to be determined. The same men who had visited the cheese factories, and contracted for 90 per cent of the cheese, met at Plymouth for luncheon on the weekly Board dates. After luncheon they went into the Board room to bid against each other for the cheese offered on the Board, knowing as they did so that every eighth of a cent added to the price of the cheese offered on the Board added the same amount to the price they would pay for the much greater amount of cheese for which they had already contracted. This suggested to Taylor and Wehrwein that if the system were changed so that all cheese would be sold on the Board, under regulations that would insure competitive bidding, much of the occasion for complaint among farmers would be removed.

While Wehrwein was studying the cheese marketing problem locally, Schoenfeld was studying the marketing of Wisconsin cheddar cheese outside the state. It was his task to locate and get the information. Schoenfeld learned that an organization called the Western Weighing and Inspection Bureau had check-weights on all cheese shipped by rail. He was successful in getting permission to copy and tabulate those weights. For several days he had a clerical force working in the Chicago offices of that Bureau, but after a short time that proved to be a nuisance to the Bureau and Schoenfeld was allowed to take the records to Madison for tabulation. On the basis of those figures, Schoenfeld prepared maps showing the location of cities in the United States to which Wisconsin cheddar cheese was consigned. He then made a study of the services rendered and the charges made for the services in each stage of the marketing process.

Having obtained a fairly clear picture of what happened to Wisconsin cheese from the time the milk left the farmer until the cheese went over the counters of the retail dealers in nearly every

state in the Union, the University group was ready to meet the demands of the Wisconsin Board of Public Affairs for information about the marketing of cheese. Scarcely had the information been obtained when occasion arose for its use. While Governor McGovern was attending the Republican National Convention in Chicago in 1912, he sent Taylor a telegram asking him to go to Plymouth, Wisconsin, to address an assembly of farmers on the marketing of cheese. On arrival, Taylor found 1,500 farmers seated in the county fairground's grandstand. Fortunately, on the basis of facts gathered by Wehrwein and Schoenfeld, Taylor was prepared to tell the farmers where they stood in the marketing of their cheese. The farmers were in a relatively weak position. They were told that if they wanted to improve methods of marketing they would have to do it themselves. So long as only a little of the cheese was sold on the Plymouth Board and more than 90 per cent was sold off the Board, but contracted on the basis of that body's price, that price would not be the result of bona fide competitive bidding.

Henry Krumrey, a farmer near Plymouth, Wisconsin, had been responsible for calling the meeting and for asking the governor to send Taylor to address the farmers. Krumrey had deep-seated convictions about the Wisconsin cheese-marketing system. He recognized the facts essentially as Wehrwein had discovered them and became a dynamic local leader.

By autumn the report on the marketing of Wisconsin cheddar cheese was ready for presentation to the State Board of Public Affairs.[13] An evening meeting, held in the University Club, was attended by members of the State Board and by some faculty members of the University of Wisconsin. The facts were displayed on maps and charts.[14] The members of the State Board listened intently to the report, and Senator Hatton, a member of the Board, said, "Well, it doesn't look as if the middleman is quite so big a thief as he has been made out to be."

Members of the Board were surprised that the retailer was getting so large a margin and that the wholesaler operated on so narrow a margin. While the findings tended to sober some of the persons who had been speaking excitedly of the marketing problem, the fact was made perfectly clear that the agencies were not functioning satisfactorily in certain stages in the marketing of Wisconsin cheese, that the limitation of competition on the Plymouth Board was depressing prices, and that something should be done. The fact was emphasized that the weakest point in the marketing process lay in the price-making machinery, that in order to get a competitive price

[13] The published bulletin appeared the following spring: H. C. Taylor, W. A. Schoenfeld, and G. S. Wehrwein, "The Marketing of Wisconsin Cheese," Wisconsin Agr. Exp. Sta. *Bulletin* 231 (Madison, 1913).

[14] Taylor, *et al.*, "Wisconsin Cheese."

it was important to sell more cheese in the open market. The University recommended that farmers of the Plymouth area agree to have all their cheese sold on the Board and have none of it contracted in advance on the basis of Plymouth quotations. It was believed by those responsible for the proposal that the cheese buyers would, under those conditions, compete for the cheese in the open market and thus give farmers a competitive price.

Krumrey and McCarthy looked upon that suggestion as too simple. They wanted to organize a co-operative sales agency. Krumrey disliked the men in the cheese trade at Plymouth and wanted to develop the co-operative sales organization to take business away from the old-line dealers. In the circumstances it seemed impracticable to press for a trial of the simpler approach which had been proposed by the University. Krumrey's attention was called, however, to the fact that since practically every cheese maker owned the factory in which he made cheese, and contracted with each individual farmer to manufacture milk into cheese and sell the cheese for him, no individual farmer had any cheese to sell. In order to federate and have cheese to sell, the milk producers delivering to each cheese factory would need to organize a cheese producers' association. That association, instead of the individuals, could then contract with a cheese maker to produce the cheese and could keep the control of its sale in the hands of the association. The local associations could then organize a cheese producers' federation to sell their cheese.

Krumrey remarked that it would be a big task to organize all the locals. Taylor said to him, "Unless you and your friends are willing to work for nothing, board yourselves, and buy your own gasoline for doing this job of organizing the locals, there can be no cheese producers' federation." Krumrey and his friends met the challenge. They soon had the patrons of more than 40 cheese factories organized and federated, ready to market their cheese, and had employed an experienced cheese dealer to handle the business. They had expected to use the public cheese warehouse in Plymouth, but when they went to lease space found that other dealers had leased it all. This did not stop the farmers. They at once began to raise money to build a $50,000 warehouse. That was just one of many problems they met.

In the meantime the University of Wisconsin had employed a mature man to take charge of the work in co-operation and marketing. It was the view of the members of the State Board of Public Affairs that while young men, when supervised, were competent in research, they could not meet the demands for public addresses before great bodies of farmers. B. H. Hibbard, then at the Iowa State College, was asked to come to Wisconsin as specialist in agricultural co-operation and marketing. Hibbard had been graduated from the Iowa State College, awarded his Ph.D. degree in economics at the University of Wisconsin, written his thesis on the history of agricul-

ture in Dane County, Wisconsin, and more recently, had written on co-operation in the marketing of agricultural products. Professor Hibbard went to the University of Wisconsin in January, 1913. He soon took full charge of the work in co-operation and marketing. He attended and participated in many meetings relating to the organization of the Wisconsin Cheese Producers' Federation. In 1914 he published a bulletin on agricultural co-operation.[15] That bulletin presented the background facts needed for adult educational work on agricultural co-operation. In April, 1915, a bulletin on markets and prices of Wisconsin cheese was published under the authorship of B. H. Hibbard and Asher Hobson.[16] Taylor continued to give part of his time to marketing studies and in July, 1915, published a bulletin on the marketing of Wisconsin potatoes.[17] In June, 1916, a bulletin on the marketing of Wisconsin butter was published.[18] That, too, was prepared by B. H. Hibbard and Asher Hobson.

About that time Hibbard and Hobson made a study in Wisconsin to ascertain if direct marketing through the parcel post might be a means of reducing the high cost of distribution through the middleman system.[19] The conclusion was that the costs on the whole were higher. The one advantage found was the securing of high quality products without delay and thus retaining their freshness. The study seemed to discourage the use of the common slogan of that day — "Down with the middleman." In May, 1917, Hibbard and Hobson published a bulletin entitled "Cooperation in Wisconsin,"[20] and in December, 1917, "Marketing Wisconsin Milk" was published.[21] The effect of the war on prices made it necessary to consider price controls that were very far from the minds of Taylor and Hibbard in January, 1913. In May, 1918, a bulletin entitled "Price-Fixing and the Cost of Farm Products," was published under the authorship of H. C. Taylor.[22]

The bulletin on the marketing of Wisconsin potatoes showed that the Wisconsin Potato Growers' Associations could put potatoes through the warehouse and into cars at a cost of 5 cents per bushel less than that of line companies, which had warehouses and agents located in central Wisconsin. That was possible chiefly because on an average co-ops handled a much larger number of cars of potatoes

[15] B. H. Hibbard, "Agricultural Cooperation," Wisconsin Agr. Exp. Sta. *Bulletin* 238 (Madison, 1914).
[16] B. H. Hibbard and A. Hobson, "Markets and Prices of Wisconsin Cheese," Wisconsin Agr. Exp. Sta. *Bulletin* 251 (Madison, 1915).
[17] H. C. Taylor, "The Marketing of Wisconsin Potatoes," Wisconsin Agr. Exp. Sta. *Bulletin* 256 (Madison, 1915).
[18] B. H. Hibbard and A. Hobson, "The Marketing of Wisconsin Butter," Wisconsin Agr. Exp. Sta. *Bulletin* 270 (Madison, 1916).
[19] B. H. Hibbard and A. Hobson, "Marketing Farm Produce by Parcel Post and Express," *American Economic Review*, 6(3):589–608 (September 1916).
[20] B. H. Hibbard and A. Hobson, "Cooperation in Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 282 (Madison, 1917).
[21] B. H. Hibbard and H. E. Erdmann, "Marketing Wisconsin Milk," Wisconsin Agr. Exp. Sta. *Bulletin* 285 (Madison, 1917).
[22] H. C. Taylor, "Price–Fixing and the Cost of Farm Products," Wisconsin Agr. Exp. Sta. *Bulletin* 292 (Madison, 1918).

per warehouse each year, and also because the co-ops supplemented the potato business by handling seed, feed, and fertilizers. The disappointing feature was that in the process of distributing and selling the potatoes that 5 cents was lost. This at once suggested the desirability of a potato growers' federation that would provide one central selling agency for all potato co-ops in Wisconsin.[23] The difficulties of the Cheese Producers' Federation kept the agricultural economists at the University from being enthusiastic about recommending a potato growers' federation.

Of the Wisconsin bulletins on marketing, those on cheese, butter, milk, and potatoes followed a common pattern. The purpose of each was to picture the marketing process clearly in order that the true character of the problems of marketing might be discovered. In the first of that series, Dean Russell said:

> Much interest is being manifested at the present time in the subject of cooperation, but this is only one of the phases of the problem of marketing and distribution. Before any rational plan can be proposed that will aid in the development of the cooperative idea, an accurate picture of the entire marketing process is necessary.[24]

That was pioneer work, and the student of the future may well ask how that form of presentation happened to be hit upon. The answer is simple. Taylor's studies of economics in Wisconsin, the London School of Economics, Halle-Wittenberg University, and the University of Berlin had not included agricultural marketing, but when he returned to the United States in 1901 he was asked to teach economic history and economic geography in the course in commerce at the University of Wisconsin, with the understanding that he might develop agricultural economics on the side. He took his teaching seriously and spent much time during the next few years in developing a course in economic geography. From two-thirds to three-quarters of the time in that course was spent in describing where each important agricultural product was grown, where it was consumed, and the transportation, merchandising, and processing which it underwent as it passed from producer to consumer.

The report of the Industrial Commission, entitled "Report on the Distribution of Farm Products,"[25] was at first Taylor's most valued source of information. That report, which John Franklin Crowell prepared under the supervision of E. Dana Durand, had much influence on his course in economic geography and in turn suggested the method used in studies from 1912 to 1917 in the marketing of Wisconsin farm products. He was much impressed with the map[26] in that book which showed the surplus grain regions of the North Central States and the primary grain markets. That map, pre-

[23] See Taylor, "The Marketing of Wisconsin Potatoes," *Bulletin* 256, pp. 23, 37–38.
[24] H. C. Taylor, *et al.*, "The Marketing of Wisconsin Cheese," *Bulletin* 231, footnote on p. 3.
[25] U. S. Industrial Commission *Reports*, 1901 (Washington, 1901), Vol. 6.
[26] *Report*, Vol. 6, opposite p. 47.

pared by the Grain Department of Armour and Company, comes close to being the parent of the Wisconsin dot maps showing the production and distribution of dairy products and potatoes.

The effectiveness of the work of the Department of Agricultural Economics at the University of Wisconsin was seriously limited by a change in University policy regarding the relation of the College to the co-operatives. That change was brought about by pressure of the State Board of Public Affairs and the Wisconsin branch of the American Society of Equity. The organization work in Wisconsin of the American Society of Equity began in 1903. The Wisconsin State Union was formed in January, 1906, and the state organ, the *Wisconsin Equity News,* was established in May, 1908. On November 1, 1911, there were about 300 local unions and 10,000 members in Wisconsin. Robert A. Campbell, Secretary of the Wisconsin State Board of Public Affairs, said:

> . . . The Equity Society is an educational organization and to date has not engaged in any business activity. This being true, the actual results of its teachings are not easily traceable, but directly or indirectly it is responsible for much of the cooperative spirit and many of the cooperative associations organized in Wisconsin.[27]

In January, 1913, with Professor Hibbard on the job for the avowed purpose of working in the field of co-operation and marketing, it became necessary to give careful thought to the role the College should play in the co-operative movement in the state. There were three agencies at work: the State Board of Public Affairs, the American Society of Equity, and the University. The question naturally arose as to what part each of these agencies could take to best advantage in this field. Taylor stated his ideas on that subject to Dean H. L. Russell, of the College of Agriculture, in the following letter dated January 13, 1913:

> Mr. O. J. Swenson of Hollandale, Iowa County, a member of a co-operative Swiss Cheese Factory Association, was here this morning, and is very much interested in the question of cooperative marketing of cheese. He has been led to believe that there is something wrong in the middleman process. He is being induced to organize an Equity Society. . . . I was careful not to knock the Equity Society, but to tell him what the College of Agriculture is willing to do to help them; I also told him what had been done in the way of the study of the marketing of Cheddar cheese. After showing him that, he was willing to wait until we could make a special study of the marketing of Swiss cheese, which I told him we would do within a year and after which we would be willing to send a man to his specific locality to look into and talk over with his Association the question of cooperative marketing of cheese . . . .
>
> . . . I have asked Mr. Swenson to cooperate with us by getting us the names of the leading farmers and the leading cheese dealers from whom we might get information.[28]

[27] R. A. Campbell, "Cooperation in Wisconsin," *The American Review of Reviews,* 47:468 (April 1913).

[28] Copy of letter in the H. C. Taylor Archives.

Five days later another letter was written to Dean Russell. It related to a meeting, held in the office of President Van Hise and attended by representatives of the State Board of Public Affairs and the American Society of Equity, which had for its purpose the threshing out of the question of the division of labor between the College and other agencies. In that meeting the position taken in Taylor's letter of five days earlier had to be abandoned, and the American Society of Equity was recognized as a co-worker in the field. The University was to carry on the research and educational work and the Equity was to carry on functions of agitation and organization. The following letter addressed to Dean Russell, giving the results of that conference and laying down the principles which determined the policy of the College of Agriculture in this field for the next five years, was dated January 18, 1913, and signed by H. C. Taylor.

As a result of a conference in the President's Office and the dinner with Bradley in the evening, the function of the University, in the field of marketing, became clearly defined in my mind. As I see it, our function is to investigate and educate and not to agitate or organize marketing institutions. The attitude of the Equity people has changed materially since this definition has been given to them. (Tubbs was present at the dinner.) They now are willing to take the position of being satisfied if we do the studying and turn over our results to them to use in their agitation, of course, with the understanding that the other side, namely, the dealers, shall have equally free use of our material.

With this function clearly defined, it is obvious to me that I made a mistake in responding to the Governor's demand and going to Plymouth to make a speech at Krumrey's meeting last July; it is furthermore clear to me that I made a mistake in responding to McCarthy's request that I outline a scheme of procedure for Krumrey, which letter I believe I showed to you and which has been published in at least two papers.

It is important that this new policy be recognized officially now that it has been unofficially launched and found to be acceptable. It is especially important just at this time because Hibbard will be called upon to go before the public on various occasions dealing with the subject of marketing. It seems to me entirely proper for him to give an historical and descriptive lecture on cooperation, pointing out its strength and its weakness, but not his function to go to a given place to tell people specifically how to organize for a specific purpose. In accordance with this policy, the function of urging cooperation upon the farmers and helping them to organize will be left to some other organization than the University.

I have spent a great deal of my time during the last week talking with Equity men who have come up to see what we are doing. On the whole, I think that everything looks promising and I believe that we have nothing to fear from the Equity people; on the other hand, I believe their efforts will prove advantageous to us.

I am writing you this note with a view to having a thorough understanding between yourself, Pres. Van Hise, and myself on this point. Senator Hatton, McCarthy, and Sir Horace Plunkett were the men who have launched this idea of functions at the capitol; of course I need not tell you the idea originated with McCarthy.[29]

[29] Copy of letter in the H. C. Taylor Archives.

An explanation of President Van Hise's leadership in adjusting the policies of the University to harmonize with the views of the State Board of Public Affairs and the American Society of Equity is found in the addresses made by Charles R. Van Hise, President of the University of Wisconsin, and by M. Wesley Tubbs, Secretary of the Wisconsin State organization of the American Society of Equity, at the First National Conference on Marketing and Farm Credits, held at Chicago April 8–10, 1913. The reports of that meeting and of similar meetings held under the same auspices for 1914, 1915, and 1916 make an important contribution to the literature on the subject of agricultural marketing.

On April 8, 1913, President Van Hise gave the keynote address at the conference[30] under the general title of "Waste in Distribution." In fact, Van Hise discussed not only waste in distribution, in the sense of failure of a product to move from producer to consumer, and deterioration of the product in the process of movement, but also "exorbitant prices and unfair dealers' profits." In these discussions, he drew from statements made by Governor Francis E. McGovern, "in a recent message to the Legislature of Wisconsin." He quoted at length from M. C. Anderson on the chaotic condition of the market for fruits and vegetables. From materials which had been gathered by the University, he quoted figures on the margin between what the farmer received and what the consumer paid for cheese, and drew the conclusion that the margin should be three cents less. The authors of the bulletin on the "Marketing of Wisconsin Cheese" found no basis for that conclusion.

In other words, that part of President Van Hise's address conformed fairly well to the popular frame of mind of the time, but did not represent the findings of one who had carefully studied the facts. In the latter part of Van Hise's address he laid down the ideal of what might now be called "integrated co-operation" — that is, co-operation between producer, transportation agencies, processors, wholesalers and retailers in working out a more economical system of producing and distributing products. Van Hise manifested interest in the consumer as well as in the farmer. His goal was that of increasing the price to the farmer and reducing the price paid by the consumer. Having published a book entitled *Concentration and Control, A Solution of the Trust Problem in the United States,*[31] he gave special attention to the subjects of "co-operation and concentration" and "the co-operative movement and the anti-trust laws." He closed his address with the statement ". . . the keywords of the solution of the industrial situation of the farmer are co-operation among themselves, co-operation with the consumer for their mutual

[30] *Marketing and Farm Credits,* Proceedings of the First National Conference on Marketing and Farm Credits, April 8–10, 1913, (Chicago: pub. by co-operating farm papers, 1913), pp. 6–15.

[31] C. R. Van Hise, *Concentration and Control, A Solution of the Trust Problem in the United States* (New York: The Macmillan Co., 1912).

benefit, and this in order to eliminate the great wastes of the existing distributing system and thus secure efficiency."[32] The facts that Van Hise accepted the invitation, and that he addressed the conference in a popular vein, show that his mind was alert to the agitations on the subject of agricultural marketing that were going on in Wisconsin.

M. Wesley Tubbs, in his address before the same conference, said:

> We have been doing some things in Wisconsin, and we are claiming a good deal of credit for the cooperative sentiment that is in that state.
>
> We can well remember the time when our agricultural institutions and the state farm papers and speakers in public were very silent upon the important proposition of marketing farm products . . . .[33]

He then described some of the things that had been done by the American Society of Equity in Wisconsin and continued, "It has forced the agricultural press, the institute workers, and the machine of education to recognize us."[34] Then he pointed out the way in which his organization got action in the legislature and stated:

> . . . The farmers had been organized in the meantime, and there were something like 12,000 on the roll. They also got busy, and elected 47 out of 52 of that bunch of legislators. . . .
>
> As I said, some of the educational people of the state began to realize that there was a farmers' organization up there that meant something. And we do not intend that they shall forget that we are there.[35]

On the same occasion, the address by Ed H. Webster, Associate Editor of *Hoard's Dairyman,* indicated that the editors of that important farm paper understood the importance of improving the marketing of dairy products. The editors were continuing to take an analytical view of the situation and calmly recognized that the next step, namely, federation of the co-operatives for purposes of more efficient merchandising, was a subject that required knowledge and leadership of high order. He said that "dairy farmers have not as yet advanced beyond the A, B, C stage of their co-operative development."[36] He recognized the necessity of leadership in teaching as well as leadership in action. In fact, Webster's presentation was more heartening to the student and educator desiring to find the facts and carry on an educational program basic to the successful development of a better marketing system than were the addresses made by the other two Wisconsin speakers.

Thus it would appear that the pressure brought to bear by the American Society of Equity up to January 18, 1913, accounted for the policy President Van Hise asked the Department of Agricultural Economics of the University of Wisconsin to follow. However, by

[32] Van Hise, "Waste in Distribution," in *Marketing and Farm Credits,* p. 15.
[33] M. W. Tubbs, "The American Society of Equity," in *Marketing and Farm Credits,* p. 127.
[34] Tubbs, "The American Society of Equity," p. 127.
[35] Tubbs, "The American Society of Equity," p. 127.
[36] E. H. Webster, "Dairy Organization," in *Marketing and Farm Credits,* p. 36.

spring of 1918 the situation had changed. Several additional radical organizations had come into the state and were making attacks on the farmers' pocketbooks, in the name of the co-operative movement, which looked dangerous. Dean Russell was in Washington assisting in the work of the U. S. Food Administration at that time. Taylor went, therefore, directly to President Van Hise to talk over that situation, after which he wrote the following in a letter to Dean Russell, dated April 15, 1918:

> In your absence the question of revising the policy of the Department of Agricultural Economics with regard to its attitude on questions of co-operation has come into the foreground. As a result of a few trips out in the state, I made up my mind that we need to become somewhat more active. With this in view I went to President Van Hise and laid the situation before him. . . .
>
> I told the President that it was my opinion that the time was ripe for the College to become somewhat more aggressive in the question of dealing directly with farmers on the subject of cooperation. The President's reply was that he had a note in his desk to the effect that he was going to call the Department of Agricultural Economics together at a very early moment to consider this very same question, that he too was of the opinion that the time is ripe for modifying our policy, that he had noted these movements that I mentioned and thought that it made it necessary for us to become more aggressive. A conference was held in the President's office Thursday evening, April 11, with President Van Hise, Prof. Ely, Prof. Commons, Prof. Morrison, Prof. Hatch, Mr. Luther, Mr. Riley, Prof. Hibbard, Prof. Galpin and myself present. As a result of the conference the consensus of opinion seemed to be that agitation for new legislation and the promotion for legislation should be carried out not by the College as such but through the American Association for Agricultural Legislation; that the agitation among farmers for the organization of specific cooperative undertakings should not be taken up by the College, but that the educational campaign on the subject of cooperation should be pushed with new vigor. For example, brief, pointed statements with regard to the advantages of cooperation should be continually pushed into the press; that the county agents should take favorable opportunities for calling the farmer's attention to the possibilities of cooperation whenever the farmers bring the matter up by discussing the marketing problems. This should be done in the form of an educational activity; that the county agent should not take the responsibility of promoting a specific organization for a specific purpose but should educate the farmers to the point where they themselves should undertake something of this kind.
>
> That the College should take steps to do more in the way of aiding in the organization of farmers. Something has been done in the past. Whenever farmers wanted to organize, literature was sent them which it was believed would be helpful, and sometimes Prof. Hibbard has gone to a meeting of the farmers to give them such aid and advice as seemed practical when he looked their specific problem over. It is believed that this type of work should be greatly increased and that it should become known throughout the state that any group of farmers who have in mind organizing for cooperative or marketing purposes, can receive assistance from the University in formulating their plans, it being clearly understood that the University takes no responsibility whatever for this specific organization; that they [the farmers] must take the responsibility of it. The only thing the College would do would be to give them the benefit of the accumulated wisdom on this subject.

During the last two years Mr. [Miles] Riley has done a very great deal in the way of helping the farmers organize. He has shown unusual wisdom in guiding them into the right channels and has never shown any tendency to become excited when he met a bunch of excited farmers. In other words, he has proved himself an efficient leader. After the meeting in question, Mr. Luther suggested to me that Riley would be a splendid man to connect up with this work. It happens that Prof. Hibbard and I had had this in mind before and had gone so far as to find out what Riley's feeling would be toward something of this kind. Briefly stated, we found that Riley and his brother are establishing a law business which is becoming remunerative and which, of course, is the source of income for both of them. In spite of this fact, during the last two years Riley has given a very great deal of his time to the N.A.O.S.,[37] for which he has never received a cent. He estimates that it cost him $5,000 to do the work he has done for them in the last two years. As I understand the situation, Riley would be willing to come into the College for half-time, continuing his relations with his brother in the law office, but Riley would not want to do this until he had found it possible to withdraw from the N.A.O.S. without doing anything to hurt McCarthy. The relations between McCarthy and Riley have been close for a long time. . . . He says (and this is strictly confidential) that it is his opinion that there will be no N.A.O.S. by next September, and that when this organization has been disposed of, so far as Riley is concerned, at least, that he then would be open to consider favorably a half-time offer from the University. . . .

. . . we want a man like Riley to be the legal advisor of cooperative companies, helping them to organize and helping them to reorganize in order that they may take on proper form. This would be strictly supplementary to the type of work which Prof. Hibbard is so capable of doing. Riley would really become the legal advisor of farmers' companies. He would also answer the many letters requesting legal advice which come to the Agricultural College. . . .

Another line of activity which was suggested, I believe especially by Prof. Commons, is the provision for auditing the accounts of cooperative companies, the idea being that the one in charge should really be an accounting advisor for these companies, not simply auditing but helping them to get their books and keep their books in proper form. One of the stumbling blocks of cooperation has been the lack of accounts. It is entirely possible that this piece of work should be done by the market commission (when we get one), but on that point I am not clear. The point on which everybody at the meeting was clear is that there should be some provision made to provide for proper audit of all the cooperative companies. This would quickly put a stop to the companies which are devoting themselves largely to selling stock and spending the proceeds with little result.

To summarize, the results of our deliberations are essentially as follows: (1) That we speed up on the educational campaign for cooperation among farmers; (2) That we give more help to farmers in organizing and reorganizing companies along cooperative lines; (3) That provision be made for auditing, either by some state institution at the Capitol or, if that is not feasible, by the College under the title of Business Advisor.[38]

In a letter to Taylor, dated April 20, 1918, Russell agreed to the

[37] For a description of the functions of the National Agricultural Organization Society, see E. A. Fitzpatrick, *McCarthy of Wisconsin* (New York: Columbia University Press, 1944), pp. 183–85. The Society was set up at Madison, Wisconsin, by Sir Horace Plunkett and Charles McCarthy and was patterned after the Irish Agricultural Organization Society, which Sir Horace had fathered for the purpose of promoting farmers' co-operatives in Ireland. Its influence was good in encouraging the state legislature to provide legal status for the co-operatives but had not the resources to continue the work.

[38] Copy of letter in the H. C. Taylor Archives.

change in policy and said, "I had talked with the President briefly in regard to this matter on two occasions and it was on the basis of this, I presume, that he called the conference to which you refer."[39] Thus in Taylor's last year at Wisconsin the stage was set for a more aggressive work with farmer co-operatives in the state. Developments of the next decade will be found in a later chapter.

Massachusetts

At the Massachusetts Agricultural College, a Department of Agricultural Economics was established in 1910 with Alexander E. Cance as head. Cance and his associates issued a bulletin in 1916 on the economics of the onion industry.[40] That bulletin was, in some measure, a precursor of the many commodity studies published a decade later which had for their purpose the guidance of production in the light of outlook reports. The point of view and character of that pioneer study is indicated by this excerpt:

> There should be in the hands of the farmers more general and definite information concerning the production (acreage, condition and estimated yield) and commercial movement of onions in and from the commercial onion-growing areas of the United States. Data from these sections are of great value in deciding upon the proper time for selling the crop.[41]
>
> Most of the onions produced in the Connecticut Valley are seed onions. Set onions are raised at a greater expense, but, in years when the Texas crop is short, sets are a valuable crop.
>
> Accurate crop reports from the Bermuda onion districts are a good index as to the quantity of sets Connecticut Valley growers should raise.[42]
>
> To guide him in selling to the best advantage the grower should have more exact information of market conditions and prices. At present farmers sell more or less blindly. . . . Price quotations and market reports carefully compiled by State or Federal market bureaus should be made available to all growers.[43]
>
> . . . Harvest carefully, grade conscientiously, brand honestly and one has gone a great way towards insuring a satisfactory price.[44]

Co-operation in marketing was recommended:

> . . . a hundred farmers can hire a marketing expert to handle their products by organizing themselves into a growers' mutual marketing and purchasing agency, operated on a strictly cooperative basis.
>
> The market demands . . . dependable goods, packed uniformly and neatly, well graded and shipped regularly in sufficient quantities to meet the demand. These can hardly be met by the individual farmer and because they cannot be met the retailer and consumer naturally go to the various middlemen for their onions. Organization and co-operation among onion growers would help to solve many of the existing marketing problems. It would also assist in disposing of onions through the auction route.[45]

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[39] Copy of letter in the H. C. Taylor Archives.
[40] A. E. Cance, W. L. Machmer, and F. W. Read, "Connecticut Valley Onion Supply and Distribution," Massachusetts Agr. Exp. Sta. *Bulletin* 169 (Amherst, 1916).
[41] Cance, *et al.*, "Supply and Distribution," p. 118.
[42] Cance, *et al.*, "Supply and Distribution," p. 121.
[43] Cance, *et al.*, "Supply and Distribution," p. 119.
[44] Cance, *et al.*, "Supply and Distribution," p. 118.
[45] Cance, *et al.*, "Supply and Distribution," p. 119.

The tobacco industry in the Connecticut Valley was also analyzed.[46] That, too, was an economic study of production and marketing and emphasized the importance of production and marketing information as a guide to farmers and merchants:

> There should be in the hands of the farmers more general and definite information concerning the production (acreage, condition and yields) of tobacco. Farmers need to know the condition of the cigar leaf crop in all the cigar leaf producing states.
>
> The grower should have more exact information on market conditions and prices to guide him in selling his crop.
>
> A government reporter should be stationed in the valley to report weekly on the condition of the market and the prices. A weekly news letter should be sent to each tobacco farmer and dealer in the valley. This information should also be published in the newspapers.
>
> Some improvements in sales methods are needed whereby the crop can be sold on its merits. The contract method of sale is fair neither to the buyer nor to the grower. The tobacco is sold while it is growing, or before it is planted, and no one can predict with certainty the quality of the crop. It is simply a gamble; the buyer gambles for the growers' crop, and he sets the price low enough to safeguard himself from loss.
>
> Tobacco should be handled co-operatively by farmers . . . This would permit each crop to be sold on its merits, and would eliminate some useless middlemen.[47]

The question of who gets the money the manufacturers pay the distributors for a case of 350 pounds of leaf tobacco was discussed. Thus the study followed the line which had been initiated at Wisconsin with a view to throwing light on the way in which the consumer's dollar was divided among those who participated in the production and distribution of a product, as well as taking the lead in emphasizing the importance of information which would help the farmer anticipate future prices and adjust his production accordingly. While Cance and his associates emphasized the outlook idea, it should not be forgotten that Ellsworth and Dodge many years earlier had laid emphasis upon crop estimates as a guide to production and to marketing.

Kentucky

Kentucky farmers had thought to improve their marketing situation in 1908 by refraining from producing Burley tobacco that season. The "night riders," whose function it was to enforce the "cutting out" of the tobacco crop, were much in the news as a group but not known individually. In September, 1908, R. T. Ely and H. C. Taylor, of the University of Wisconsin, visited Kentucky to study the situation. There was little Burley tobacco in sight. They saw tobacco on but one farm, and that was being protected against "night riders" by well-armed guards.

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[46] S. H. DeVault, under direction of A. E. Cance, "The Supply and Distribution of Connecticut Valley Cigar Leaf Tobacco," Massachusetts Agr. Exp. Sta. *Bulletin* 193 (Amherst, 1919).

[47] DeVault, "Supply and Distribution of Tobacco," p. 215.

With the amount of excitement that had been created over the price of Burley tobacco, it is not surprising that the marketing of that commodity was the first to receive attention when marketing studies were initiated. The Burley tobacco bulletin[48] gave the history and geography of the production of that crop in Kentucky, described the methods of harvesting, curing, and preparing for the market, the marketing institutions, the classes of buyers, and the functioning of the whole marketing process. The authors stated their idea of efficiency in marketing and made suggestions for improvement:

> To determine the economic efficiency of a marketing system we must judge it by a threefold criterion:
>
> a. It must keep wastage of the product, of time, of energy, and of money, to the minimum;
>
> b. It must return a fair profit, and only a fair profit, to each individual whose services are necessarily connected therewith;
>
> c. It must not permit of harmful monopoly practices.
>
> Judged by this criterion the loose-leaf system, superseding as it has the hogshead and barn selling methods, is seen to be the most economically efficient system yet devised for marketing Burley tobacco in Central Kentucky.
>
> The loose-leaf system itself, however, is susceptible of improvement in elimination of waste product and duplication of effort.
>
> From the standpoint of both grower and manufacturer, there is much need of improvement in curing methods and in the grading of the leaf as it comes from the stalk. . . .
>
> Proper grading applies with peculiar force to Burley tobacco. Approximately 60 per cent of the total amount of tobacco sold over the Lexington floors is capable of improvement by rehandling and resorting. This improvement would result in raising the price at least 2 cents per pound. . . .
>
> Kentucky needs a state marketing law. This law should delegate to some department or institution the authority to describe and establish standard grades for all farm products which permit of division into grades and for standard receptacles for products sold in containers. No product not graded in accordance therewith should be permitted to be exposed or offered for sale unless specifically described as not graded or placarded in legible letters "NOT GRADED."[49]

Kansas

At the Kansas State College of Agriculture and Applied Science, Theodore Macklin made a study of the marketing of Kansas butter.[50] That study was devoted in a large measure to describing the character of Kansas dairying and the organization of the means of assembling butterfat from areas of a sparse cow population and converting it into butter in large creameries called centralizers. Some attention was given, however, to the middleman problem. That phase of the subject was discussed in terms of who gets the money which the

[48] C. D. Bohannan and D. P. Campbell, "A Preliminary Study of the Marketing of Burley Tobacco in Central Kentucky," Kentucky Agr. Exp. Sta. *Bulletin* 202 (Lexington, 1916).

[49] Bohannan and Campbell, "Preliminary Study," pp. 158–59.

[50] T. Macklin, "The Marketing of Kansas Butter," Kansas Agr. Exp. Sta. *Bulletin* 216 (Manhattan, 1917).

consumer pays. Macklin suggested that the farmer look to three things which might increase his profits, none of which related to the middleman charges for service: The improvement of the quality of cream, an increase in the amount of butterfat to be sold, and a reduction in the cost of producing butterfat.[51]

This glimpse of the marketing research and activity in six states indicates that the approach in the agricultural colleges was that of helping the farmers to understand their marketing problems as a basis of individual or co-operative action. Thus the work in the states was supplementary to that of the U. S. Department of Agriculture, which gave major attention to providing grades and standards, regulations and inspection services to insure honest dealing, and market news service.

[51] See Macklin, "Marketing of Butter," p. 78.

21.

Miscellaneous Contributions Prior to 1922

In the years 1913, 1914, 1915, and 1916, conferences on marketing and farm credits were held in Chicago.[1] They were sponsored by representatives of the farm press, by representatives of the land-grant colleges, and by others. The four sessions were significant because they gave evidence of public interest in the subject of agricultural marketing at the time when the U. S. Department of Agriculture was preparing to expand its work in this field. The fact that presidents of universities and deans of agricultural colleges and officials of the U. S. Department of Agriculture participated in the programs did much to open their minds to the importance of developing research and teaching in that phase of agricultural economics.

In 1914 Ed R. Kone, Commissioner of Agriculture of Texas, called a meeting of commissioners of agriculture in the southern states and others interested in the marketing of agricultural products. The ideas expressed at that meeting were summed up in a resolution which is reproduced here to indicate that an attitude of mind existed in the states favorable to the rapid development of a market news service and the organizing of co-operative agencies for the marketing of farm products. The resolution reads:*

> . . . it is the sense of this meeting of Commissioners of Agriculture of the Southern States, and of citizens participating in a conference upon the subject of the marketing of farm products, that State and Federal Departments of Agriculture, and bureaus of marketing can render the best service to producers, at this time, along two main lines of endeavor, viz., information and co-operation. By information we mean complete and dependable facts

[1] See National Conference on Marketing and Farm Credits, *Proceedings* of the first conference, held in Chicago April 8–10, 1913 (Chicago: pub. by co-operating farm papers, 1913); *Proceedings* of the second conference, held in 1914 (published in newspapers only); *Proceedings* of the third conference, held in Chicago, Nov. 29–30 and Dec. 1–2, 1915 (Madison: The National Conference on Marketing and Farm Credits, 1916); *Proceedings* of the fourth conference, held in Chicago Dec. 4–9, 1916 (Madison: The National Conference on Marketing and Farm Credits, 1917).

* Southern States Association of Markets, *Proceedings*, 1914, in Texas Dept. of Agr., *Bulletin 36* (Austin, March–April, 1914), pp. 43–44.

concerning supply and demand. We especially emphasize the need of information concerning the consumption of farm products; seasonable and timely reports concerning the needs of various markets at the moment when products are ready for sale, and tested methods of economical and profitable grading, classifying and packing. In this connection, we recommend that State Departments of Agriculture, as far as their funds will permit, make careful estimates of probable supply and demand before the planting season, so that prior to the marketing season, and periodically during the marketing season, they can make reports of supply and demand; also, that they should acquaint producers with the condition of each accessible principal market, to the end that scarcity in one market may be supplied, and congestion in another market may be avoided.

We recommend that the Federal Department of Agriculture make a careful study of the consumptive capacity of the principal markets for perishable products.

By co-operation is meant the association of producers in communities, and the correlation of local or district organizations, through larger central bodies, for co-operative selling, for classifying and grading their products, for guaranteeing their quality, and for dealing directly with consumers, or associations of consumers, or with selected agents, in so far as may be possible.

In this connection, we recommend that producers profit by the proved and successful experience of European farmers, and of farmers in other States of the United States who have organized for handling their products in bulk; for improving the grade, and for eliminating unnecessary expense in marketing.

Clearly market information and farmer co-operation were central in the thinking of those present at that conference on marketing in Texas in 1914.

American Academy of Political and Social Science

The American Academy of Political and Social Science took an early interest in the marketing of agricultural products. In 1911 the Academy published a symposium on American produce exchange markets.[2] S. S. Huebner planned the symposium and obtained contributions from men connected with boards of trade and the U. S. Department of Agriculture as well as members of the faculty of the University of Pennsylvania. That volume was published at the time when interest in the marketing of agricultural products was rising rapidly in the United States and at a time when few farmers understood the utility of the produce exchanges in the marketing of their products.

The first article was specifically designed to explain the service rendered by produce exchanges.[3] In it Huebner said:

A modern produce exchange may be defined simply as an organized market place which enables people to buy and sell freely certain commodities either in person or through a broker; and which in order to facilitate such trade has for its fundamental objects the promotion of uniformity in customs and usages, the inculcation of principles of justice and equity in trade, the

[2] "American Produce Exchange Markets," American Academy of Political and Social Science, *Annals*, Vol. 38 (September 1911).

[3] S. S. Huebner, "The Functions of Produce Exchanges," American Academy of Political and Social Science, *Annals*, 38:1–35.

facilitation of the speedy adjustment of business disputes, the dissemination of valuable commercial and economic information, and the securing to its members all the benefits of co-operation.[4] The exchange itself is not organized for the making of money, and does not fix prices or make transactions in the trade as an organized body. It is merely instrumental in affording a convenient market place, in regulating trade, and in disciplining the conduct of its members. Its members act on their own responsibility. They may do as much business as they like, provided they conform to the standards which the rules of the exchange prescribe for the regulation of the trade.

In the free buying and selling of our vast crops by thousands of middlemen, it is not at all surprising that many questionable practices should arise. Great importance should therefore be attached by all interests coming in contact with the market to the disciplinary rules which have been adopted for the regulation of brokerage transactions, and the maintenance by this means of a standard of commercial honor in the trade very much higher than would otherwise be the case.

Practically all the exchanges have adopted similar rules in this respect. . . .

For the benefit of the trade the exchange regulates the inspection, grading, weighting, storage and shipment of grain, the brokerage charges for the various types of services rendered, and the deposits necessary to secure the fulfilment of time contracts. . . .

. . . special reference should be made to the supervision of exchanges over the inspection, grading, weighing and storing of produce, and the issuance of "general warehouse receipts" to represent title to the same. Such supervision is of the utmost importance to the proper operation of large "cash" and "future" markets. By virtue of this efficient supervision, as stated by President Merrill, of the Chicago Board of Trade: "both the buyer and the seller are guaranteed a square deal, both as to the quantity and quality of the grain which changes title.". . .

The delivery of warehouse receipts on exchange contracts gives to the grain, cotton and produce they represent the same quality of mobility, for purposes of sale or deposit as collateral, as is given to corporate property represented by stocks and bonds listed on our stock exchanges. If it were not for organized markets and the existence of warehouse receipts, the vast quantity of produce lying in warehouses and elevators, aggregating hundreds of millions of dollars, would not be available for business purposes except in a very crude way. If the holders of such produce wished to borrow against it, it would be necessary each time to have the creditor see and inspect the same; and every such inspection would necessitate great inconvenience and unnecessary delay and expense.[5]

Huebner emphasized the fact that produce exchanges furnish a continuous market so that there is no time when the farmer cannot dispose of his produce. He pointed out also that:

Produce exchanges also serve as a world's clearing house for trade and crop information, and in this respect render an invaluable service to producer, middleman and consumer. . . .

The value of this prompt and elaborate collection of trade information is fourfold, viz.:

1. . . . it enables dealers and speculators to exercise their best judgment at once in the form of actual transactions, and thus to reflect this current

[4] These fundamental objects of a produce exchange will be found enumerated in the constitution of every leading American exchange.

[5] Huebner, "Functions of Produce Exchanges," *Annals,* 38:3–4, 9, 11.

information in the quotations long before it would otherwise be impressed upon the general public. . . .

2. . . . The daily discounting of current events makes unnecessary . . . a sudden decline or rise in price upon the wide publication of events which have been slowly developing. . . .

Without organized exchanges for the immediate discounting of information, the individual producer would find himself in a most defenceless position, unable to know the fair value of his crop from day to day. . . .

3. . . . The modern grain and cotton markets are so organized to-day that the distributing interests in the trade are constantly informed as to the "visible supply" on hand, which may be defined as representing all grain, or any kind of given produce, which is stored in warehouses, elevators, cars or boats, and which is available for purchase. . . .
4. It serves to level prices between different markets.[6]

The second article, entitled "Methods of Marketing the Grain Crop," was contributed by Siebel Harris, who explained:

The objects of the [Chicago] Board of Trade as stated in its rules are: "To maintain a Commercial Exchange; to promote uniformity in the customs and usages of merchants; to inculcate principles of justice and equity in trade; to facilitate the speedy adjustment of business disputes; to acquire and to disseminate valuable commercial and economic information; and generally to secure to its members the benefits of co-operation in the furtherance of their legitimate business pursuits."

It is evident that the primary object for which the Exchange exists is to form a great market where buyers and sellers can come together and transact business. It should be borne in mind that the Exchange itself does not in any way deal in commodities, but confines its work to fixing and enforcing the rules governing buyers and sellers.[7]

Harris continued with a description of the marketing of grain through country elevators into primary markets and seaboard markets, and discussed ways in which boards of trade guarantee integrity of business in the central market.

Fourteen additional articles discussed and described grain classification, grading and inspection, crop reporting, sources of information in produce markets, government regulation of speculation, commodity prices, the Chicago Board of Trade, the principal produce exchanges of the country, as well as cotton exchanges, the coffee market, and shipping facilities. The entire volume was timely and was undoubtedly the most adequate treatment of the subject available to students of that day.

For several years the American Academy of Political and Social Science continued to publish articles relating to the marketing of agricultural products. One of these was by E. K. Eyerly, associate professor of Rural Sociology at Massachusetts Agricultural College, on co-operation among farmers. While that article dealt with co-operation for a great variety of purposes, it gave special attention to

[6] Huebner, "Functions of Produce Exchanges," pp. 16–18, 20–21.
[7] S. Harris, "Methods of Marketing the Grain Crop," in "American Produce Exchange Markets," *Annals,* 38:36–37.

the co-operative marketing of fruits. Eyerly also emphasized the values in co-operation other than added profits on the specific crop marketed:

> The chief significance of co-operation among our farmers is possibly not that of economic gain. . . .
> . . . The older societies in particular lay stress upon the value of the "co-operative spirit"—the fellowship and loyalty that cause their members to stand together in adversity as well as in prosperity.[8]

A few months later an article by Clyde L. King, Wharton School of Finance and Commerce, University of Pennsylvania, appeared in the *Annals*.[9] It gave attention to the cost of distribution of certain farm commodities and gave special emphasis to the development of local transportation in the neighborhood of cities with the view of reducing the cost of marketing.

A volume of 306 pages on "Reducing the Cost of Food Distribution"[10] was the next major contribution of the Academy to the thinking of the day on the economics of marketing. A large number of business men, as well as university professors and members of the staff of the U. S. Department of Agriculture, prepared articles for that issue of the *Annals*. The editors of the *Annals* continued to manifest their interest in the subject. In 1919 two articles appeared, one by W. F. Gephart, of Washington University, on "Grading and Standardization in Marketing Foods,"[11] and the other by Charles J. Brand, Chief of Bureau of Markets, U. S. Department of Agriculture, on "The Vital Concern of Agriculture in Foreign Trade."[12]

Joint Commission of Agricultural Inquiry, 1921

The agricultural situation in the United States in 1921 was recognized as so serious that Congress set up a Joint Commission to study the problem, and President Harding called an agricultural conference. It is well, therefore, to take up briefly the findings on marketing and transportation of that Commission[13] and the findings on marketing and prices of the National Agricultural Conference, January, 1922,[14] before carrying forward the story of the marketing work of the Bureau of Agricultural Economics and the state colleges.

[8] E. K. Eyerly, "Cooperative Movements Among Farmers," American Academy of Political and Social Science, *Annals*, 40:67, 68 (March 1912).

[9] C. L. King, "Can the Cost of Distributing Food Products Be Reduced?" American Academy of Political and Social Science, *Annals*, 48:199–224 (July 1913).

[10] "Reducing the Cost of Food Distribution," American Academy of Political and Social Science, *Annals*, Vol. 50 (November 1913).

[11] W. F. Gephart, "Grading and Standardization in Marketing Foods," American Academy of Political and Social Science, *Annals*, 82:263–70 (March 1919).

[12] C. J. Brand, "The Vital Concern of Agriculture in Foreign Trade," American Academy of Political and Social Science, *Annals*, 83:35–47 (May 1919). This paper was read in Chicago on Apr. 24, 1919, at the Sixth Convention of the National Foreign Trade Council.

[13] U. S. Congress, Joint Commission of Agricultural Inquiry, *Report of the Joint Commission of Agricultural Inquiry*, 4 parts (67th Congress, 1st Session, *House Report* 408, serial 7922, Washington, 1921–1922). The four parts of this report are:
Part I — *The Agricultural Crisis and Its Causes*
Part II — *Credit*
Part III — *Transportation*
Part IV — *Marketing and Distribution*

[14] U. S. Congress, National Agricultural Conference, *Report* (67th Congress, 2nd Session, *House Document* 195, (Washington, 1922).

Representative Sydney Anderson, of Minnesota, was chairman of both the Joint Commission and the National Agricultural Conference.

Part IV of the report of the Joint Commission, entitled *Marketing and Distribution,* gave special attention to "The cause of the wide difference between the price of agricultural products paid to the producer and the ultimate cost to the consumer."[15] Distribution of the consumer's dollar is shown in an elaborate set of charts. One set of charts shows (for grain, fresh fruits and vegetables, and livestock) the way in which the primary market price is divided among producers, local buyers, and transportation agencies. A second set of charts shows the manufacturer's distribution of the dollar which the wholesaler pays for merchandise. The items covered are cost of material, cost of manufacture, operating expenses and profits. These charts cover trade-marked food commodities, rolled oats, corn flakes, canned milk, bread, peanut butter, macaroni, and salt.

Other charts show, also, for the same merchandise, details of operating expenses which include costs of selling, advertising, transportation, and taxes. A noteworthy fact shown in those charts is the high cost of selling and advertising compared with the cost of manufacture. A third series of charts shows the wholesale grocer's distribution of the dollar which the retailer pays for merchandise. Items included are cost of merchandise, operating expenses, and profits on the turnover. On the average, the wholesale grocer had a stock turnover six times a year. The Commission stated: "There is every indication that wholesale grocers can modify the cost of operation by developing a greater frequency of stock turn."[16] Retailers took a gross margin of from 20 per cent to 30 per cent of the consumer's dollar, but the net profit was from 2.5 per cent to 6.5 per cent on groceries.[17]

The economic and social point of view is illustrated by this statement regarding the function of the retailer:

> The retailer performs the final function in distribution of essential commodities and gives fulfillment to all preceding efforts by making merchandise available to consumers at the time, place, and in the form required by them.
>
> The retailer's true function is that of serving as a purchasing agent for his community; as such he selects and carries a reserve supply of merchandise to meet the requirements of the individual consumer.
>
> When the retailer enters business he assumes the responsibility of performing a public function, that of providing commodities and services to his community, economically and conveniently, and maintaining such environment as is necessary and desirable to the consumers who support him. If he fails in his responsibility and performs only as a distributing agent for the manufacturer, he ceases to be an economic factor in the community which he serves.
>
> One of the outstanding defects in retail distribution is the retailer's failure to purchase stock in a manner that will provide a steady, even flow of

[15] U. S. Congress, Joint Commission of Agricultural Inquiry, *Report of the Joint Commission of Agricultural Inquiry,* Part IV, p. 14.
[16] *Agricultural Inquiry,* Part IV, p. 156.
[17] *Agricultural Inquiry,* Part IV, p. 173.

merchandise to the consumer without accumulation of surplus stock, which ties up capital and credit and adds to his cost of operation. It seems probable that the greatest factor of waste in distribution is in idle merchandise stock on the shelves of the retailers and the warehouses of the wholesalers. Idle merchandise accumulates a burden of interest, insurance, rent, taxes, depreciation, shrinkage, and obsolescence, in addition to tying up an unnecessary amount of capital and credit. When this burden is permitted to develop, it must be passed along to the consumer if the retailer is to remain in business.

The policy of overpurchasing reflects the practice of manufacturers who make inducements to retailers to purchase in larger quantities than they can dispose of quickly. Merchandise investment reaches its highest point of efficiency when stock turns exactly correspond with the merchandise requirements of the community and the facility for purchase without exhausting stock.[18]

The general views of the Commission on the whole problem of distribution are stated briefly:

The commission is convinced that the problem of distribution is one of the most important economic problems before the American people, and that only through its solution can there be an equitable adjustment among agriculture, industry, transportation, labor, finance, and commerce. . . .

. . . A better system of distribution can only be hoped for through a more intelligent study of methods, facilities, and purposes.

It is the responsibility of the entire people to make such adjustment of custom and habit as will permit the development and establishment of a system of economic distribution which will result in a more equitable relationship between what the producer receives and what the consumer pays.

. . . The American farmer has been chiefly occupied with the problems of production, involving all the uncontrollable forces of nature and the combating of crop diseases and insect pests. He is concerned with individual production rather than with service, marketing, and distribution. Until such time as the agricultural producer considers production in its relation to consumer demand and satisfaction, he is unlikely to materially improve his condition. . . .[19]

The commission believes that the situation of the agricultural producer can be materially improved by a standardization of production of crops in producing centers so as to permit more economic selection, grading, and preparation of commodities in the producer's local markets and recommends that the agricultural producers of the United States be encouraged to develop cooperative associations to hasten the standardization of agricultural production, improve the distributive processes, and reduce their costs.

With the development of cooperative marketing organizations, production becomes more uniform and better standardized with benefit to the producers, distributors, and consumers. The Federal Government has recognized the economic value of agricultural producers' organizations for the purpose of cooperatively producing, preparing, and marketing products by removing the limitations which have previously retarded the full development of such organizations. The State and Federal Government should affirmatively promote and encourage cooperative enterprise. Both State and Federal Governments should enact the necessary legislation to assure co-

[18] *Agricultural Inquiry,* Part IV, p. 162.
[19] *Agricultural Inquiry,* Part IV, p. 4.

operative associations against unfair discriminations and to insure such associations against unfair practices.

Through such cooperative organizations groups of producers can assume responsibility for the kind, character, and grade of commodity offered for sale. . . .

Agricultural producers can greatly improve their situation by developing better knowledge of the marketing and distributive processes through which their products reach the ultimate consumer and, on the basis of such knowledge, adapt their production, products, preparation, and selection to the satisfaction of consumer requirements. . . .

New economies can be brought about through the development of greater uniformity of products, grades, standards, and containers, together with an improvement in methods of handling by agencies in local, primary, and terminal markets which will tend to create greater certainty on the part of the receiver and the part of the producer as to the salability of products. . . .

Economies can be effected and wastes can be eliminated through the establishment of qualified and authorized agencies to arbitrate disagreements between shippers and receivers as to value, condition, kind, grade, and quantity of commodities. . . .

Much can be accomplished in the direction of economic distribution by a more systematic utilization of warehouses to absorb temporary surplus and distribute more evenly in response to consuming demand. . . .

There can be great improvement in the distribution of perishable products through the establishment of more adequate central wholesale markets and a more uniform flow of perishable products from producers to consumers with less waste and expense.

Converters of agricultural products can materially reduce the cost of distribution of trade-marked commodities by adjusting production more definitely to the current consuming requirements of the public. . . .

There can be developed an economic distribution of essential commodities when the industrial production of the country is based upon a better knowledge of the requirements of consumer and a recognition of the fact that distributive agents can not function economically except as they maintain an even, continuous flow of merchandise through the channels of distribution. . . .

Wholesalers can reduce the burden of overhead costs by purchasing stocks which can be turned with economic frequency. . . .

There is a tendency on the part of the manufacturer and wholesaler to undertake distribution over larger territories than can be intensively and economically served. . . .

Retailers can materially improve their situation and reduce the cost of distribution through the development of more complete knowledge of the requirements of the consumers whom they serve. . . .

Permanent solutions of the problems of distribution must come as a result of a higher standard of knowledge and ability on the part of producers, manufacturers, transporters, storers, and distributors, and a more enlightened recognition of their obligation to the public. . . .

Governmental agencies should cooperate with producers, trade and labor organizations, and with each other to secure more accurate and current statistical data of production, prices, movement and consumption of commodities, and to promote standardization of product and service as well as the knowledge of improved method and practice and more effective relationship between the various agencies engaged in production, manufacture, and distribution.

Consumers can cooperate to reduce the cost of distribution by assuming a greater responsibility in securing the commodities they require, instead

of depending upon retailers to display a great variety of goods with superlative convenience, and spacious display rooms with extravagant furnishings, fixtures, and facilities. Such environment is created in response to consumer demands and must be paid for out of the purchase price of the merchandise the consumers buy.[20]

A brief chapter was devoted to the conditions and principles necessary to make farmers' co-operative organizations successful. Emphasis was laid upon the fact that a co-operative organization is an organization of men rather than capital, "the principle of 'one man, one vote' has pretty generally been accepted as the sound basis of control of co-operative organizations."[21] The Commission clearly favored co-operatives built from the ground up, rather than the centralized type built from the top down. Yet it also recognized that a federation of locals may serve a good purpose.

> Local associations may be, and in many instances have been, amalgamated into a general selling agency, distributing in large volume. These central cooperative agencies ordinarily represent the local cooperative associations rather than the membership and perform only such functions as are necessary to coordinate the selling policies of the various local units. Here again, the general principle must be kept in mind that the local advantages of the local unit should be maintained and the local unit permitted to conduct its own business so far as this can be done consistently with carrying out the sales policy under a coordinated central agency. . . .
>
> . . . the success of cooperative associations probably lies more generally in the organization of farm production and standardization of farm products, thus reducing the varieties and grades of farm production to a more standard basis and reducing cost of distribution all along the line. It seems altogether likely that the cooperative association can not succeed as a holding corporation for the purpose of withholding the crops from the market to establish an artificial price. . . .
>
> It is quite possible through standardization of production through accumulating shipments in volume of known quality and backed by the responsibility of soundly financed cooperative organizations to produce a more even flow of farm products in response to demand, and thus diminish the daily, weekly, and monthly fluctuations of prices of farm products. Indeed, it is in this field that the greatest prospect of advantage and profit to the farmer seems to lie. The success of cooperation can not rest upon the establishment of artificial control of prices. It must rest rather upon the association's ability to perform the necessary service more efficiently and with greater advantage both to the producer and the general public than the service is now performed by existing agencies. The commission is convinced that there is a wide field in which the farmer's cooperative organization can wisely and efficiently function to the mutual advantage of the producer and the consumer. . . . There is a power inherent in collective action which does not belong to an individual action and the larger the organization the greater the power. Recognizing this fact the public imposes an obligation upon the collective organization which it does not impose upon the individual. The cooperative organization, therefore, has an obligation to the public as well as a responsibility to its members and the community which it serves.
>
> The farmer is entitled to a fair return for his products through cooperation, but his organization should not only look toward securing a fair

[20] *Agricultural Inquiry,* Part IV, pp. 9–12.
[21] *Agricultural Inquiry,* Part IV, p. 228.

return to the membership for its products but also to a reduction of the general costs of distribution to the consumer. While the farmer is entitled to the cost of production plus a profit where the law of supply and demand permits it, he is not privileged through the power of organization to impose a higher price on the consumer than the law of supply and demand justifies. Of course, the farmer must receive over a series of years a price in excess of the cost of production. It is obvious that if such is not the case production will inevitably adjust itself in its relation to demand on a basis which will give the farmer a reasonable return for his crops, but as previously indicated cooperative organization can not exist on a basis of artificially restricted production, arbitrarily controlled supply for purposes of speculation or to make profits not justified by the law of supply and demand, nor should it be permitted through the power of organization to create any situation which is discriminatory or unfair to the public or to its competitors. . . .

The cooperative association, at least until it is able to definitely demonstrate its ability to establish and operate a more direct, efficient, and less costly scheme of distribution than exists at present, should be organized in such a way as to make possible the coordination of its activities with those of existing distributive agencies. . . .

The solution of the farmers' distributive problem does not lie directly in legislation, but rather in the creation of economic agencies controlled by him for the sorting, handling, and distributing of his crop. . . .

As previously indicated, the success of such organizations will depend in large measure, first, upon a careful analysis of the problem to be solved; the creation of a sound organization adapted to the peculiar conditions to be met, the development or employment of a management experienced in the business and skilled in its technique, a provision for adequate fixed and working capital, sound credit, and the creation of such relationships with existing or future distributive agencies as will provide for the even flow of farm commodities in response to demand.

The commission believes that the rational development of farmers' cooperative associations will tend to hasten the standardization of agricultural production, improve the distributive processes and reduce their costs, and that the organization of such associations should be encouraged.[22]

One familiar with the agitations of the time will recognize that the Commission was definitely opposed to the centralized type of co-operatives advocated by Aaron Sapiro and others as a means of price control. It is also evident that the Commission did not favor price control by government action such as was being advocated at that time under the slogan "equality for agriculture," and the "equalization fee" concept which was later incorporated into the McNary-Haugen bill.

National Agricultural Conference, 1922

The National Agricultural Conference,[23] held January 23–27, 1922, was proposed and organized by Secretary Henry C. Wallace, assisted by a committee made up of U. S. Department of Agriculture bureau chiefs and their assistants. In an unpublished manuscript, written by H. C. Taylor in 1925 immediately after he left the U. S.

[22] *Agricultural Inquiry*, Part IV, pp. 228–31.

[23] See U. S. Congress, National Agricultural Conference, *Report* (67th Congress, 2nd Session, *House Document* 195, Washington, 1922).

Department of Agriculture, there is a story of the organization of the National Agricultural Conference from which the following is excerpted:

> Soon after coming to Washington, Secretary Henry C. Wallace began to talk about a National Agricultural Conference which should have for its purpose the development of a program of action which might be carried out by the Department or by Congress. During November and December, 1921, the Secretary often talked about the objectives to be accomplished by a conference representative of all persons directly and indirectly connected with farming.
>
> There seemed to be plenty for such a conference to do but the first thing was to sell the idea to President Harding. This had to be accomplished little by little as the opportunity came for the Secretary to get the ear of the President. Gradually the result was accomplished, and one day between Christmas and New Year's Day, when the President and the Secretary were parting company after a game of golf, the President turned to the Secretary and told him to go ahead with the agricultural conference.
>
> At that time I was in Pittsburgh attending the annual meetings of the American Economic Association and the American Farm Economic Association. The next morning after the above conference between the President and the Secretary, I received a telegram asking me to call the Secretary by telephone. This I did and was informed that the President's consent to the holding of a National Agricultural Conference had been obtained. Secretary Wallace asked me to obtain suggestions regarding the program from members of the economic associations before leaving Pittsburgh. Valuable suggestions were received from R. T. Ely, John Commons, Wesley Mitchell, G. F. Warren and others.
>
> Upon returning to Washington the Secretary told me that, because it was to be an economic conference, I was to take the major responsibility. I said that I stood ready to give my full time to the matter, but that the whole Department should be enlisted and all committees should center in the executive office with the Secretary or Assistant Secretary as chairman. It was thought that such a plan would best utilize the contributions of all. This was important because the chiefs and men in the older bureaus knew men all over the United States who could help make the conference a success. While the Secretary and I, in our early morning conferences, did the preliminary work in developing the program, and the Secretary was the final arbiter on all points where differences of opinion arose, the presentation of the plans for the program to the Department committee, as it met in the office of the Assistant Secretary, called forth many valuable ideas. This arrangement had the additional advantage of keeping every branch of the Department informed of the progress of program building with the result that the whole Department was solidly behind the undertaking. Unity of purpose and harmony of action seemed to be perfect in the Department in the planning and carrying out of the President's National Agricultural Conference in January 1922.[24]

The program and resolutions of the conference covered a wide range of topics. Findings relating to marketing and prices will be considered here. The committee on marketing of farm products reported on co-operative marketing, price fixing, price adjustment, and orderly marketing:

[24] H. C. Taylor, *A Farm Economist in Washington, 1919–1925,* (unpublished manuscript, 1925), pp. 242–43.

Cooperative Marketing

This committee strongly indorses and recommends the cooperative marketing of farm products. . . .

. . . The economies and benefits both of a private and public nature arising from collective action should be made available to those engaged in agriculture to the same extent as they are available to those engaged in other industries where corporate organization on a large scale is feasible. . . .

We further urge that Congress promptly enact affirmative legislation which will permit farmers to act together in associations, corporate or otherwise, with or without capital stock, for purposes connected with the production, processing, preparing for market, handling, and marketing in interstate commerce such products of persons so engaged with specific statements of their rights, powers, remedies, and limitations, and which will permit such associations to have marketing agencies in common and to make such contracts and agreements as are necessary to effect such purposes.

Price Fixing in the Marketing System

Prices to producers are determined by one of three methods of selling: (*a*) Individual bargaining, (*b*) selling by associations, (*c*) governmental guaranties or purchases.

The farmer is entitled to look to governmental agencies for comprehensive and accurate information, in order that selling judgments may be better formed, and for the largest measure of ready credit compatible with sound finance methods, in order that there may be the utmost freedom of selection of time and price.

The committee feels in respect to the naming of selling prices by the joint action of members through cooperative associations, that Congress should clarify present Federal statutes by an affirmative declaration that such action by cooperative associations is not included in the prohibitions against restraint of trade.

With respect to the question of governmental price guaranties, we feel that there should be a comprehensive study of this subject; therefore we urge that the Congress cause a careful investigation of this whole problem to be made by some proper authority which will report its findings as early as practicable.

Price Adjustment

Agriculture is necessary to the life of the Nation; and, whereas the prices of agricultural products are far below the cost of production, so far below that relatively they are the lowest in the history of our country; therefore, it is the sense of this committee that the Congress and the President of the United States should take such steps as will immediately reestablish a fair exchange value for all farm products with that of all other commodities.

Orderly Marketing

Orderly marketing which represents the even distribution of the Nation's farm products in response to the demands of the trade and of the consumer is basic in giving the farmer a fair price for his crops or products. The individual farmer is not competent to handle or even to influence this question. Neither the volume of his product nor his individual financial resources enable him to influence the distribution of a commodity as a whole, and he is generally unable to provide the facilities needed to finance, warehouse, or sell his seasonally produced crops at the right period of time. Only through cooperative farmers' agencies can these basic matters of

distribution, financing, warehousing, and sale be effectively provided. It is in the general interest of all classes of the people that farm products be marketed in a systematic, orderly manner, with adequate provision of all facilities involved.

The fundamental requirements for orderly marketing include the organization of producers on a commodity basis in order that large dependable quantities of standardized farm products may be offered for sale with speculation and all unfair and dishonest practices in distribution reduced to a minimum. This distribution and sale should be based on information of the domestic and foreign supply, and of its location, systematized, both seasonally and geographically. It includes warehouse facilities provided especially for seasonally produced products with waste eliminated and credit requirements adequately provided by making the collective collateral of warehouse goods a security for loans.

It is fundamental to orderly marketing that the State and Federal Governments do those things which are impossible of achievement by an organization of farmers, that helps them to a better understanding of their problems, and we strongly urge in the interest of the whole public that all of the agencies of the Government which furnish crop or trade information that can be used as a guide to intelligent distribution be strengthened, and that the information be made readily available to the parties at interest, that the Government, through both legislation and administrative action, assure the producer, the trade, and the public alike, the principles of a "square deal" in all their business relationships.

The committee is further of the opinion that the President of the United States in his address to the National Agricultural Conference has made a contribution of great value to the success of orderly marketing in suggesting that "with proper financial support for agriculture, and with instrumentalities for the collection and dissemination of useful information, a group of cooperative marketing organizations would be able to advise their members as to the probable demand for staples and to propose measures for proper limitations of acreage in particular crops."

This committee, therefore, strongly urges the formation of strongly organized cooperative associations of farmers, preferably on a commodity basis, as the most efficient agencies through which to handle the different matters relating to the handling, financing, distribution, warehousing, and sale of farm crops.[25]

That committee stressed co-operative marketing at the beginning and at the end of the above statement. Following the general statement, the committee dealt briefly with state and federal service and regulation, including the information service, inspection service, various forms of regulatory action, warehousing, standard grades, and the marketing cost studies with a view to improving business methods. In the main the statements on services and regulations outlined and emphasized the importance of the work being done by the Bureau of Markets. That part of the report has the earmarks of having been prepared by the men of the Bureau and accepted without material modification by members of the committee from the outside, who in turn were primarily responsible for the parts of the report quoted above.

The report of the committee on crop and market statistics also

[25] U. S. Congress, National Agricultural Conference, *Report,* 1922, pp. 170–72.

outlined and commended those services. The report was almost wholly a product of the Bureau responsible for the service. L. M. Estabrook was the secretary of the committee.[26] In memory and in honor of that earnest and industrious member of the crop reporting service whose work has been described in another chapter, we quote:

> An industry so fundamentally important as agriculture to the welfare and prosperity of all the people, upon which more than one-third of the entire population is dependent for a living, which has a larger capital investment and gives employment to a greater number of people than any other industry, which makes up one-half of the export trade and represents one-third of the purchasing power of the United States, whose products are consumed in every home, which is directly in competition with other countries of surplus production, and which is dependent upon foreign countries of deficient production to furnish a market for its surplus products, is entitled to an adequate and efficient statistical service for its crop and live-stock production, market movement, stocks on hand, surpluses and deficits, farm and market prices, and the various factors affecting supply and demand.[27]

During the 80 years prior to 1922, the emphasis in government crop reporting had been on its importance as a basis of intelligent marketing, as well as a guide to the farmer in production. That traditional view is stated in full within the committee report with embellishments unnoted in previous reports.

In addition to the committee reports on prices and marketing, addresses before the conference contained many references to these subjects. In the President's address, prepared in the main at least by Secretary H. C. Wallace, is:

> It can not be too strongly urged that the farmer must be ready to help himself. . . .
>
> Take cooperative marketing. American farmers are asking for, and it should be possible to afford them, ample provision of law under which they may carry on in cooperative fashion those business operations which lend themselves to that method, and which, thus handled, would bring advantage to both the farmer and his consuming public. In countries where these facilities and opportunities have been afforded such cooperative organizations have been carried to the highest usefulness and are recognized as aiding both farmer and consumer. They make the farmer's selling price higher and the consumer's buying price lower.
>
> But when we shall have done this, the farmers must become responsible for doing the rest. They must learn organization and the practical procedures of cooperation. These things we can not do for them, but we can and should give them the chance to do them for themselves. It will be for them to demonstrate their readiness and willingness and ability to utilize such instrumentalities. There is need for wide dissemination of information and understanding of methods, and for development of what I may call the spirit and purpose of cooperation. The various excellent societies of farmers which are represented here have a large responsibility in this regard. They have already done much, but they have much more to do if the American farmer shall be brought most effectively to help himself through organization and cooperation. . . .

[26] U. S. Congress, National Agricultural Conference, *Report*, 1922, p. 197.
[27] U. S. Congress, National Agricultural Conference, *Report*, 1922, p. 164.

With proper financial support for agriculture, and with instrumentalities for the collection and dissemination of useful information, a group of co-operative marketing organizations would be able to advise their members as to the probable demand for staples, and to propose measures for proper limitation of acreages in particular crops.[28]

The chairman of the conference, Sydney Anderson, said in his address to the conference:

I believe that advancement in farm organization, if not a preliminary to, at least must go hand in hand with improvements in the distributive machinery of the country. This machinery has gradually adapted itself to unorganized methods of selling farm products which the farmer's status as an individual seller necessitated. . . .

. . . It is quite impossible for the individual farmer, however much assistance the Government may give him in this direction, to keep himself fully informed in regard to prices and economic movements.

It is impossible for him to regulate his sales in accordance with market demand. . . .

The farmer must delegate the power of selling his crop and of putting it in shape for market and of performing all of the services necessary to its delivery, in quality, quantity, time and place, to some organization which he controls. . . .

The Government must remove the obstacles which retard, if they do not prevent, combinations of farmers for the purposes of sorting, grading, and packing or processing their products. The States must give legal status to organizations of this kind which will establish definitely their legal powers and obligations as well as the legal powers and liabilities of their members . . . .

I think it is a truism that many discoveries of fundamental importance and many economic and scientific formulas are dependent for their practical applicability upon the discovery of new means, methods, and machinery for their application. So the ideal of distribution is dependent upon the discovery and the development of new machinery and methods.

Improved grades of agricultural products, standard containers, more accurate and current crop and live-stock statistics, as well as a better knowledge of the use of these grades, standards, and statistics, must precede the development of very comprehensive improvement in the distributive machinery of the country.[29]

That co-operative sales agencies should be built with a firm foundation in the local group of neighboring farmers who know each other and who have a common marketing problem was emphasized by G. Harold Powell, of the California Fruit Growers' Exchange, who was asked to give the principal address on co-operation:

The strongest [marketing] organizations are those which specialize in handling a single crop, such as citrus fruits, raisins, walnuts, prunes, peaches, etc.; and, when this specialized organization is adopted, it develops the greatest dependability if founded by small groups of growers who are neighbors, who have confidence in one another, who belong to the same churches, schools, or other neighborhood institutions, and who federate these local units into a central marketing agency. These neighbors form local associations, provide packinghouses, warehouses, and other permanent

[28] [W. G. Harding] "Address by the President of the United States," in *Report,* 1922, pp. 10–11.

[29] S. Anderson, "Agricultural Prices and the Present Situation," in *Report,* 1922, pp. 25–26.

facilities through the investment of their own capital; they take part in local management, and are an intimate personal part of their own institutions and their activities. . . .

The decentralized form of organization may not always be adapted to a seasonably produced, nonperishable or semiperishable crop that requires warehousing, or needs to be prepared for distribution in a central plant and finances provided for storage, distribution, and sale. In such industries as these, a larger centralized marketing or warehousing unit may be a more adaptable business form. But those who are responsible for its direction should never lose sight of the need to develop a local participation and some degree of responsibility in the affairs of the organization. Failing to do this, and to keep the members thoroughly informed, is likely to result in a large, impersonal association in which the member is removed from participation in solving his individual, local affairs and becomes a submerged, disinterested part of a centralized form of corporate organization. . . .

The future of cooperative marketing rests not only on the ability of the farmers to handle their business problems, but also upon how well they meet the present pressing questions that lead to world-wide social and economic unrest. These obligations should be inherent in all cooperative organizations; they are responsibilities which no group of producers can avoid. No group of farmers should have the right to operate collectively if it uses the power of organization to restrict production artificially, to lessen or arbitrarily control the supply, to permit avoidable waste, to speculate, to make profits that do not reflect the law of supply and demand, to create any situation through the power of organization that is discriminatory or unfair to the public or to a competitor, or to give a member, an officer, or an employee any advantages that are not open to all alike. But it is in the public interest, and most vital to the restoration and stability of American agriculture, that cooperative marketing shall be encouraged and assisted by the Government and the public generally, and that the State and National Government shall affirmatively recognize the right of farmers to organize in order to handle agriculture's inherent problems. The test of these organizations should be "what is their substance," rather than "what is their form." They must serve the public as well as their own members if they are to constitute effective agencies through which the complex problems of American agriculture are to be solved in the ultimate interests of the whole Nation.[30]

On the subject of state and national aid in an effort to reduce the cost of distribution, Powell said:

It is also well to point out that though the producer has ever been ready to invoke the law to save him from the fate of modern conditions, he should appreciate that any effort to reduce the cost of distribution through legislation, or by other governmental action — except as it provides a sound legal basis for the organization of farmers, establishes legal grades and standards, makes the currency system more adaptable to the necessities of agriculture, prevents unfair or dishonest practices either by the producers or by the distributing agencies — is likely to result in the future, as it always has in the past, in disappointment.

Anything that can be done by the State or Nation which is impossible of achievement either by the individual farmer or his organization, that helps them to a better understanding of their problems, that develops the factors which affect the handling, storage, and transportation of crops, that furnishes dependable information on crop production, or other information

[30] G. H. Powell, "Fundamentals of Cooperative Marketing," in *Report*, pp. 79, 83–84.

that serves as a guide to intelligent distribution and sale, and that insures the principle of a "square deal" in all business relationships is in the interest of the producer, the trade, and the public alike. It is in the public interest that those branches of the Department of Agriculture which furnish this basic crop-production or marketing information, as well as the regulatory branches of the department, shall be adequately supported and effectively developed.[31]

The National Agricultural Conference heard rumblings of demands for federal legislation looking toward control of prices, but the emphasis of the conference was on the adjustment of production in relation to supply and demand, and on the use of co-operation among farmers to improve the machinery of marketing.

Aftermath of Conference of 1922

The adjournment of the National Agricultural Conference did not end the pressure for consideration of the question of restoring the purchasing power of the farmer by government action. We believe that most of the members of the conference went home believing that the problem would in due course be solved through adjustments in production and through co-operation in marketing. But there was one person who remained after the conference whose ideas had to be considered. George N. Peek, assisted by Hugh S. Johnson, had prepared a statement regarding the cause of the low purchasing power of farmers and the effect of that low purchasing power on industry, particularly those industries largely dependent upon sales to farmers. Peek and Johnson proposed that agencies be developed under government management for making the protective tariff effective on farm products of which the United States produces a surplus for exportation. The price of the farm product in the domestic market was to be maintained on a parity with the prices of the things farmers buy.

At the request of Peek, the Chief of the Bureau of Agricultural Economics organized a seminar, the members of which included two agricultural economists from agricultural colleges, several members of the staff of Bureau of Agricultural Economics, Peek and others whom Peek asked to have present. Several sessions of the seminar were held. The Bureau prepared statistical tables showing the difference between the actual prices and the prices which would give those commodities the same purchasing power they had on the average from 1905 to 1914. The seminar meetings were of value in exploring the significance of Peek's proposal as set forth in *Equality for Agriculture*.[32] Peek felt he had been well treated by the B.A.E., but it was obvious to him that the Bureau as a branch of the executive department could take no action unless it was authorized to do so by Congress.

Peek's next move was to ask the Secretary of Agriculture to call a conference of nationally known farmers, processors of and dealers

[31] Powell, "Fundamentals of Cooperative Marketing," in *Report*, p. 81.
[32] G. N. Peek and H. S. Johnson, *Equality for Agriculture*, 2nd ed. (Moline Plow Company, Moline, 1922).

in agricultural products, and financiers to consider his proposals. When the Secretary was hesitant Peek went to President Harding. The latter encouraged the Secretary to respond to Peek's request. Wallace invited persons suggested by Peek to a conference in the Secretary's office on February 13, 1922.

The Secretary of Agriculture made the following statement in opening the conference:[33]

> I am not going to take any of your time to point out the agricultural situation. There are, of course, all sorts of efforts being made to relieve it. One class of people wants to reinflate; another class wants the government to fix prices in one way or another. We have asked you to come here to consider one of these devices to which we have been giving some attention for the past week. It is a plan suggested by General Hugh S. Johnson and George N. Peek. I will not undertake to discuss it but will leave that to General Johnson; but, as I understand the plan, it has the general purpose of trying to relate prices of agricultural commodities to prices of other basic commodities so that instead of one of them breaking off and falling separately there will be a movement of the two together so far as possible. . . . There has been this interesting development — probably some of you are familiar with — during the past month a great many people in Congress, in both Senate and House, who previously took a conservative attitude with regard to all of these government efforts to relieve this situation, gradually are taking a much more liberal attitude.[34]

Hugh Johnson then presented each member of the conference with a copy of the second edition of *Equality for Agriculture* and discussed the main points of the proposal which is summarized in that pamphlet:

Brief of the Argument

I. Agricultural tariffs do not protect agriculture. World price fixes domestic price of every crop of which we export a surplus. Industrial tariffs can and do protect prices of articles for which the farm crop is exchanged. The fair exchange value of the crop is thus reduced in proportion to the protection afforded industry. The protective principle is operated for the benefit of industry to the detriment of agriculture which can no longer afford to bear the burden.

II. In world depressions the rapid spread between crop prices (which collapse at once with world price) and protected prices (which do not) destroys farm buying power, demoralizes domestic commerce and deprives our people of necessities. It finally stultifies the principle of

[33] This and the following quotations from speeches are from *Stenographic Report* of the Conference called by Secretary H. C. Wallace in Washington, February 13, 1922, "To Consider Means of Re-establishing a Fair Ratio of Exchange Between Farm Products and Other Products." Typewritten copy in U. S. Department of Agriculture Library, 1950, pp. 6, 7–9, 18–19, 22–23, 24, 48–51, 53–55, 63, 60–61, 64.

Those present in addition to Secretary Wallace and members of his department were:
Julius H. Barnes, Former Chairman, U.S. Grain Corporation
Charles G. Dawes, Director of the Budget, Treasury Department
John R. Howard, President, American Farm Bureau Federation
Hugh S. Johnson, Moline Plow Company
Otto H. Kahn, New York banker
F. J. Lingham, Lockport Milling Company
George McFadden, cotton merchant and exporter
George N. Peek, Moline Plow Company
Gray Silver, American Farm Bureau Federation
Frederick B. Wells, grain dealer
Thomas E. Wilson, President, American Institute of Meat Packers

[34] *Stenographic Report*, p. 1.

protection by forcing industry to equalize with crop price which is world price.

III. The doctrine of protection must be revised to insure agriculture equality of tariff protection and a fair exchange value with other commodities, on the domestic market, or the protective principle must perish.

It can be so revised only by some plan, in respect of surplus crops, to equalize supply with demand on the domestic market, at not to exceed fair exchange value with other commodities, to protect that value by a tariff, and to divert surplus to export and sell it at world price.

IV. If we are to retain the doctrine of protection, we can equalize our price structure and preserve our domestic markets only by application of the principles stated in Point III. No plan yet proposed recognizes this.

Conclusion

. . . The principles stated herein have been presented to some of our leading farmers, statesmen, financiers, millers, grain and cotton producers and exporters, and economists. Their soundness has not even been seriously questioned, much less refuted. An opinion has, however, been freely expressed, chiefly by persons with special adverse interests, that it would be impracticable to give them execution, or at least to do so without interfering with existing agencies. *Certainly, in the presence of a question so profoundly affecting the organic policy of American agriculture, industry and commerce, it lies in the mouth of no man to say that American genius for organization and administration cannot devise a plan to put sound principles into effect.*

But it is not for any individual to draw up such a plan and recommend it for legislation. The difficulties are great and the industries affected so intricate that none but a commission of experts should undertake the task. No such commission can be assembled or given adequate protection and incentive in such a task without legislative sanction. [35]

In the discussion of the purpose Hugh Johnson said:

. . . it would seem to us that with the genius of our people for organization and adminstration as represented in this room, and with the facts so compelling, certainly there must be a way to work out a plan if these principles are correct. The plan as we worked it out was something like this: If you are to segregate surplus and regulate supply to demand you must have a powerful organization, a powerful financial unit of some sort. We called it a corporation, and proposed that this corporation would guarantee to buy the surplus of at least two, and possibly more, of the principal crops of which we export a surplus, and to sell that surplus in the world market at world trade prices, at a loss. . . .

The next question is how to finance such a corporation . . . The theory was that we would set up a corporation and . . . that this corporation would be financed by the government collecting this differential from every conventional unit, pound, or bushel, of the crop as it was first sold, and turn it over to the corporation, and that this fund should be called a guaranty fund.

Mr. McFadden: How would the government collect that?

General Johnson: Collect it as a tax, just like a sales tax. However, we do not call it a tax.

[35] Peek and Johnson, *Equality for Agriculture*, pp. 3–4, 31.

Mr. McFadden: That is, on every pound of wheat there would be a tax on the man who produced it.

General Johnson: Let us not call it a tax.

Mr. Kahn: Call it an assessment.

General Johnson: Yes, an assessment by the government. It is not voluntary; it is collected under the sanction of the Constitution and is held by the corporation, and is used by the corporation for the purpose of carrying out the plan.

In the discussion Otto Kahn said:

. . . I think we ought to look at this thing sympathetically for the very reason that it is new, for the very reason that it is helpful. Now, in my own analysis, the trouble which confronts us is due to three main causes.

First, the fact which you have referred to that the farmer buys in a protected market and sells in a free-trade market. That is unquestionably true. Although, you yourself are willing to take as an index number the prices which prevailed ten years prior to the war, at which time the farmer sold in a free-trade market and bought on a protected market.

Second, our trouble is the Versailles Treaty, which is probably the most devastating treaty the world has ever seen, . . . and the high cost of labor, that is gradually coming down.

Third, our foolish method of taxation, which interferes with the free flow of capital, is a drawback, especially to the industrial activities of the whole nation, including the farmer.

Julius Barnes said:

. . . It seems to me that the public service today should not attempt to use a constitutional power to force on unwilling agriculture such a plan as this . . . recovery is under way; there is hope for agriculture in this country; the foreign basis on which farmers must sell their crops has improved in the last four weeks; and even though farmers have suffered for two years it would be a mistake for us to set up an artificial process to correct the trouble, for the natural processes are in the way of correction now. That is my conclusion after much consideration of this plan. I believe that by next harvest time the farmer will reap in relation to other commodities.

In response to Julius Barnes, Otto Kahn said:

I am convinced, Mr. Barnes, that we cannot possibly straighten out our own affairs until the farmer is reasonably contented and reasonably prosperous. I am so thoroughly convinced of the immense menace of the present farmer situation that I would go to any permissible limit, for the time being, in order to help the farmer, even though the scheme was not one that ordinarily I would approve, with my training as a banker and economist and business man.

Otto Kahn then asked Hugh Johnson if he had considered:

. . . the social and political effect which would follow a step that practically would mean a monopoly.

And Johnson replied:

Yes, I have considered that, and rather satisfied my mind with the feeling that after you were all done you would not be in a very different situation in the production and marketing of crops than industry is, in

the production and marketing of its products. That is, that we have had a half century of experience with nearly the same thing in effect.

John R. Howard (President of the American Farm Bureau Federation) spoke at length on the outlook for agriculture. He called attention to the fact that the exportation of agricultural surpluses was retarded because the United States had become an interest-receiving nation since World War I (1914–18) instead of an interest-paying nation. Howard also noted that manufacturers seemed to be able to adjust production to demand at a satisfactory price in the domestic market, and in case of a surplus they seemed to be able to segregate that surplus and sell it abroad for what it would bring. He mentioned a particular make of watch as an example.

The discussion continued until luncheon time when the conference was adjourned until 8:00 P.M. with the understanding that those dealing in or processing farm products would meet in the afternoon to prepare a reply to the Peek-Johnson proposal.

At the evening session Julius Barnes presented a report:

The members of your Conference, familiar with the processes of grain handling, wheat milling, meat packing, and cotton handling, have carefully considered the subject discussed in this morning's session.

We agree that the main objective of a restoration of the farm price to a healthy relation with the price of those commodities which the farmer must buy, is greatly to be desired, in the interests of national welfare. It is therefore in a spirit of real sympathy that every avenue for accomplishing this has been explored in our discussion.

We feel that the restoration of this fair balance between farm prices and other commodity prices would be more stable if attained by natural processes. We have considered the hastening of these processes of healing by the proposed establishment of an agency with national statutory authorities with the objective of the maintenance of a domestic price level in some relation to the domestic price of other commodities, and for the marketing of the export surplus abroad, perhaps regardless of the domestic price level. We have reached these conclusions:

As to grain, it is possible that, by the exercise of absolute governmental authority, controlling the sales action of the farmer, with or without his consent, and levying by national authority a per cent of his sales receipts for the purpose of a guaranty fund, without resting his contribution on his voluntary consent; by controlling trade processes, and by an absolute embargo against independent import or export, there might be established, temporarily at least, an agency making effective this policy of a domestic price level independent of the world price level. It would be a matter of serious consideration, however, whether in attaining this end, there would not be created grave menaces to the whole industrial and social structure, by reason of:

A. The throwing out of balance of production relativity by stimulating the production of one crop under such control, as against other crops not so controlled.

B. The alteration and possible destruction of marketing channels which have been developed under many years of highly competitive experience.

C. The furnishing of bread abroad cheaper than the home price, with the resultant advantage to our foreign trade competitors, and the menace this would constitute in our own foreign commerce in industrial products, thus indirectly undermining the home market for farm products as well.

D. The difficulty of establishing any commodity relation which would reflect with equal justice in all communities throughout so broad a territory, when the commodity relation must necessarily fluctuate widely between separate communities.

E. The possibility, through errors in judgment, in sales and price policies, of bringing on a possible widespread financial panic, extending beyond the grain circles immediately involved.

F. The creation of a vast bureaucratic organization, inviting political influence in the decisions as to commodities to be protected, and as to prices to be established, and as to appointments to be made.

As to live stock, it is difficult to picture the attempt to establish a price relation on corn, for instance, without attempting a relationship into the live animals which consume 90 per cent of the corn. Live animals being highly perishable, afford no opportunity for a choice of time in marketing a surplus which might be created under the encouragement of a promised stabilized price, and present great difficulties therefore in their disposal. We can fairly see no possible means of establishing a fair relation of price on live stock which promises any success of maintenance.

As to cotton, remembering that our domestic production affords 60 per cent for export, we see these peculiar hazards in any proposal to protect a domestic price level.

A. The surplus portion runs to such enormous values that adequate finance against possible unfavorable developments for outlet, presents a problem of great magnitude.

B. The accumulation of a concentrated large stock of unsold cotton would, of itself, distinctly menace the world price level, which would fear its dumping on the market at any time, with resultant price collapse.

C. The trade processes such as manufacturing and distribution would operate under such a hazard of price disturbance, especially as to their foreign trade in finished products, that it would likely result in partial suspension, and unemployment.

D. The application of an arbitrary per cent of valuation might determine a price so high that there would be stimulated automatically foreign competitive production, particularly of South American, Egyptian, and Indian cotton, which would fill the present channels of consumption abroad; destroy trade connections perfected by years of overseas trade by our merchants, and leave us with surpluses unsalable at any price whatever, with resultant severe financial disturbance.

We believe it clearly evident that the prices of supplies and commodities which the farm must purchase have recently pointed clearly downward, while in the same period the price of farm products is clearly upward. We realize the impatience experienced while these natural healing processes are developing, but we do feel that the process is well under way, and fairly certain of early attainment. We feel it is not yet generally comprehended how well along this process of equalization has recently proceeded. For instance, using the Department of Labor averages for ten years, 1905–1914 as 100, and the price quotations in Bradstreets as of February 9, 1922, we

get the following index numbers: Wheat — 138 per cent, hogs — 135 per cent, cotton—145 per cent.

The construction of any commodity index, including general commodities, is exceedingly difficult, particularly as any index of retail prices since the pre-war period has been distinctly raised by the injection of new factors such as higher transportation, and particularly of higher taxes. Using, for instance, not a table of ultimate consumer price in which the relation has necessarily been widened by these factors, but, using the Bradstreet's table of all commodities as of January 1, 1922, the comparison then of all commodities is 131.

We believe it fair to state then, that evidently the staple commodities of wheat, hogs and cotton may be assumed today to be very nearly the pre-war relation with any fairly constructed commodity index, and this has been attained without governmental interference with trade processes. It has been aided by certain steps taken in the farmers' interest. The easing of credit difficulties through the activities of the War Finance Corporation has been a great aid. The Washington Conference, substituting international discussion and conference and thus carrying a promise of the ultimate solution of those obstacles to overseas trade, such as reparations, unbalanced budgets, and appalling exchange fluctuations, has been a great factor in a clear revival of confidence in the recuperation of Europe. Recently there is clearly an enlargement of her ability to buy and to pay for our surplus products. We believe these influences will continue to improve overseas trade to a revived Europe and will reflect into our industrial employment and activity, and thus carry a promise of a better consumption at home and abroad, which, after all, is the quickest solution for farm price difficulties.

That statement represented the views of Barnes (grain), F. J. Lingham (milling), George McFadden (cotton), F. B. Wells (grain), and Thomas E. Wilson (meat packing).

In the discussion that followed the presentation of that report both Howard and Kahn pointed out that the "report addressed itself not so much to the economic soundness of the principle as to the application and the results that might be expected to flow from its application."

Otto Kahn then said:

I am wondering whether it would not be wise to await the result of these measures which have recently been passed by Congress . . . which will give to the farmer greater facilities, greater financial capacity, better selling organizations than he has ever had before, and then to see whether those measures now adopted by Congress, or still to be adopted, will accomplish the desired result, before we attempt a scheme so far-reaching and possibly harmful. . . . as a financier I can say that if it is possible to assist the farmer in the proposition there is nothing financially impossible in the proposed scheme, nor is there anything economically wrong with the scheme which seeks to bring about the correct proportion between the burden on the farmer and the reward to the farmer. . . . It seems to me that it is a scheme that ought to be used only as the very last resort, if nothing else will help. If nothing else will help, then I think we will have to try something of that kind.

Mr. Howard: Mr. Kahn, if there was assurance that the measures which you speak of, and an improved European condition, would bring about these results we would all be very happy. The farmers, however, are getting

pretty restless in many sections of the country. You know when men, through well-applied labor and over considerable periods of time, cannot make their interest and their taxes, a good many of them are going to see red, and that is exactly what is happening. There is more unpaid interest and more delinquent taxes throughout the Middlewest than ever before. . .

Secretary Wallace said:

. . . this is the most serious agricultural depression the country has ever experienced. The purchasing value of farm products in all previous depressions has been considerably higher than their purchasing value during the last six months. . . . I believe that we should carefully consider every plan that offers any promise of even alleviating the situation, and we should feel that our time is well spent in so doing.

The evening session lasted three hours. Many alternative proposals were made, specifically the reduction of railway rates, the scaling down of railway and industrial wages, the reduction of interest rates and the readjustment of production with a view to greater production by farmers for home use and less production for the market. A reading of the transcript suggests that those present recognized that many factors were involved besides the tariff. The meeting adjourned without any conclusions which could serve as a basis of action. The immediate result was negative, but ideas had been generated and in less than two years they produced the McNary-Haugen bill.

22.

Wallace's Search for Remedies for Low Prices[1]

By the fall of 1923 the agricultural situation had gone from bad to worse. Losses were cumulative and bankruptcies were multiplying. The purchasing power of farm products was far below the pre-war level, while the purchasing power of city products and services was far above the pre-war level. This was not a new condition. It had become a matter of common knowledge by the time of the National Agricultural Conference in January, 1922.

One morning, in the spring of 1923, Secretary Henry C. Wallace had said to the Chief of the Bureau of Agricultural Economics, "Suppose the Norris bill were passed. How much wheat would have to be gotten rid of to put wheat on an import basis and make the protective tariff effective?" The statisticians of the Bureau replied that about fifty million bushels would have to be gotten rid of to make the tariff effective. Nothing more was heard about the matter until September, 1923, when the Secretary asked Taylor to think the matter over and see if he could find some means of helping to solve the farmer's problem. Wallace said, "We have done what we can as a Department of Agriculture but conditions are not improving. In fact, the bad effects are cumulative and more of the bad results of deflation are showing now than a year ago when price ratios were even worse." In the course of that conversation the Secretary said that while the work of the Department must be from the national point of view, legislation was not all from the national point of view; that labor, industry, and finance used effective methods of obtaining legislation to promote their own class interests. He said:

Furthermore, while we as department workers should adhere to the national point of view, which we are certainly doing in striving to save

[1] This chapter is presented essentially as it was written by H. C. Taylor, in 1925.

agriculture from destruction, it does not follow that farmers as a class must adhere to the national point of view when other groups are not doing so. In fact, unless farmers as a class get busy and *fight* for their rights we in the Department will not long be able to take a national point of view because the point of view of other interests will dominate us. I want you to think the matter over and see if you can suggest some means of helping to solve the farmer's price problem.

In response to Secretary Wallace's request, Taylor sent the following statement to him on the 22nd of September, 1923:

The Agricultural Situation and the Means of Setting it Right

While wheat is the center of attention in the consideration of the agricultural situation today, it is not long since cotton and wool were in the foreground and it may not be long before the corn-hog belt will be the center from which the distress signal will be heard.

The wheat situation is a symptom of a pathological condition in agriculture which extends to nearly every branch of the industry. The fact is, deflation took place in agriculture—the unorganized industry of the country—very much more rapidly than it has taken place in the organized industries. The result has been to throw out of equilibrium the prices of the products the farmers have to sell in comparison with the prices of the products the farmers have to buy.

The problem which we must solve, therefore, is that of establishing proper price ratios between the prices of farm products and other products. Numerous programs of action have been suggested, some of which are being put into effect. Others have not gotten beyond preliminary consideration. The various lines of attack upon this problem may be outlined as follows:

I. The problem is being attacked by the Department of Agriculture, the state colleges and the extension forces through research and educational work, which have for their purpose the providing of information to farmers. This information is designed to enable the farmers to adjust their agricultural production more intelligently with respect to the present costs of production and the prospective market prices. Cost of production and farm organization studies are being made effective through the extension forces. They help the farmer to analyze the problems arising out of necessary readjustments in the combination of enterprises due to the increase or decrease of a particular line of production.

The work in crop and livestock estimates which provides the forecasts of production, estimates of "intentions to plant" and forecasts on probable demand, supplies better information than the farmers have ever before had as a basis of adjusting production to market demand. The study of production and the changes in production in the various foreign countries, with which our export products are competing, gives advance information with regard to what should be expected by our farmers in the way of foreign competition. All of this looks toward providing the basis for intelligent readjustments. When this information is understood and used, the farmer has the basis of making a more intelligent decision as to what to produce and, in fact, whether he should remain in agriculture or enter some other occupation.

At the same time, much is being done through the market news service and through the inspection service to facilitate the marketing of what has been produced. A knowledge on the part of the farmer of the grade

of the product which he possesses and the price at which his particular product will sell in the central market is the starting point for efficient marketing. A knowledge of how to harvest and pack the product so that it will reach the market in a satisfactory condition is very important. Cooperation in performing these functions has proved one of the best methods of securing standardization and efficient marketing. Standardization and shipping point inspection result in sending to the market only the merchantable product and provide the basis for the sale of the product in transit by a process much less expensive than has been afforded in the past. On the basis of market information and standardization of the product, cooperative marketing is reducing to a minimum the cost of getting the product from the producer to the consumer. These methods have been applied with a view to promoting efficient production, the right balance between the different lines of production and the efficient marketing of the product. But if these methods alone are to be depended upon to bring about the re-establishment of the proper ratios between the prices of farm products and the prices of the products of other industries, the prospect is for a long continued agricultural depression.

II. Another line of attack which is made upon this problem by farmers and farmers' organizations is the attempt to organize the producers so as to establish a system of orderly marketing which will help re-establish proper price ratios. If agriculture could be as well organized as the anthracite coal industry, for example, so as to limit production and bargain collectively in the sale of the product, this system would prove effective in re-establishing pre-war price ratios. Whether or not it reaches this degree of perfection, cooperative marketing is an undertaking that should be encouraged because of the increased efficiency in standardization and in the movement of products from producer to consumer. But unless it reaches that stage of development which enables it to control production and distribution of the staple products, we cannot look to cooperation for an early solution of the problem of proper price ratios.

III. It has been suggested that the modification of the Immigration Law, to allow greatly increased numbers to come in from other countries, would help in re-establishing proper ratios between the prices of the products which the farmer sells and the prices of the products which he buys. It is believed that a large percentage of such immigrants would go into the mining, manufacturing and transportation industries. Such a movement would tend to reduce labor costs, thus reducing the prices of the products which the farmers buy and the cost of transportation of the products which he sells, and would at the same time increase the demand for agricultural products at home. It is also suggested that, in case the potential immigrants to the United States are not allowed to come, they will migrate to other countries, such as Canada, Argentina, Australia and New Zealand, enter into agriculture there and increase the surplus in these countries, which will be put upon the European market in competition with our surplus. The facts seem to indicate that the present immigration schedule is not greatly reducing the number of immigrants from the countries of northwestern Europe, but is greatly reducing the number from the countries in southeastern Europe.

IV. Another line of action which has been suggested is a vigorous control of economic organizations, looking toward the protection of the rights of the public and the reduction of the power of such organizations to maintain excessive prices of the products of industries. This implies a

direct attack on the system which has retarded the deflation in the transportation and manufacturing industries to the end that proper price ratios may soon be established. [The major thing in mind here was the direct attack upon the tariff with the view of reducing the rates on many products.]

V. Another proposal looking toward maintaining an agricultural price schedule comparable to that in other lines of production is the application of the principle of the protective tariff to farm products of which we produce a surplus. The means suggested is through the establishment of an agricultural export commission with broad powers, which would enable it to buy, store, or export farm products and to levy taxes on specific products to pay the cost of stabilizing the price of the particular product. Any effort of this kind should set as the upper limit of the price to be secured, that price for a specific farm product which will give it the same purchasing power in the wholesale market as it possessed during the ten-year period prior to the World War of 1914–18. This proposal, in order to be effective and not to develop more grief than satisfaction for the farmer, must carry with it such brakes on production as will avoid an unbalancing of the different lines of production through an over stimulus of one particular line. In this case the tax on the product to cover the cost of marketing the surplus would serve as a brake on production and the maintenance of the general schedule of prices on the basis of pre-war ratios would be a protection against the unbalancing of the different lines of production.

Another point not to be overlooked is that if the principle of maintaining a given ratio between the prices of farm products and the prices of other products is once established, it is to be expected that this same principle might be applied to hold prices of farm products down to this ratio when, in the course of time, the growth of population and the resulting relative scarcity of farm products would tend to raise their prices above the prices of other products. The present gain in this case would be for the farmer and the future gain for the consumer of farm products.

Another matter which should receive full consideration is the fact that dumping our agricultural surplus in foreign markets at prices below that maintained at home might stimulate foreign manufacturing industry to the detriment of American industry. Attention should be called to the fact that it would also discourage expansion of agriculture in those territories which compete with our export products and also help to feed the peoples of Europe at this time when many of them are in great distress. The arguments for and against such an export commission, with liberal powers and large opportunity for using discretion, might be presented at much greater length. After all had been said, I believe it would be agreed that whether or not this is a method which it is desirable to apply at the present time, it is the only method thus far proposed which would quickly re-establish the pre-war ratios between the prices of farm products and other products and which looks toward giving immediate new hope and prosperity to the American farmer and maintaining the agricultural industry intact for such emergencies as may lie before this Nation.

The question is, shall we adhere to the policy of providing information as a basis of individual and collective action and await the very gradual recovery of agriculture through growth and readjustments of population; or, shall we undertake to bring about a more immediate solution of the problem by direct governmental action which will re-establish pre-war price relations at an early date?

After reading that statement, Wallace suggested to Taylor that it would be desirable for Taylor to travel through the wheat producing states and gather first hand information regarding the financial distress of farmers, and their ideas about what should be done to improve the situation. Taylor entered North Dakota on October 2, 1923, and finished the survey on October 20 in Oregon. With a state statistician serving as guide in each state and also furnishing automobile service, Taylor and the statistician visited individual farmers during the day and met with groups of farmers each evening. The group meetings were for the purpose of giving to farmers an opportunity to send to Secretary Wallace such facts and ideas as they thought significant. Taylor asked questions to draw the farmers out but made no speeches. His findings were summarized from day to day in telegrams to Secretary Wallace. Complaints were made by the farmers that the seed loans were being collected over-strenuously and that the War Finance loans were being handled in a manner embarrassing to many of the farmers. In answer to a question as to whether or not buying land at war prices had been a factor in the financial embarrassment of the farmers, the farmer view was that those who overreached themselves in buying land at high prices already had been liquidated.

The consensus of farm opinion was that the basic difficulty arose from the fact that prices of farm products, both wheat and cattle, had fallen but that the prices farmers had to pay for farm equipment, supplies, labor, and consumption goods remained high. The farmers were convinced that the need was for the reestablishing of prewar price ratios. They believed that an important factor in the situation was the protective tariff which was thought to be effective in supporting the prices of things farmers buy but not effective on farm products of which the United States produces an exportable surplus. The George Peek idea of making the tariff effective on farm products of which the United States produces a surplus had reached some of the farmers and was stated in various forms in the different group meetings.

Before Taylor returned from the West, Secretary Wallace asked Charles J. Brand to take an active part in finding a way to make the tariff effective on wheat and other products of which the United States produced a surplus. Brand got in touch with Peek and Hugh Johnson, and the McNary-Haugen bill was prepared.

Several of those persons whom Taylor met on that trip came to Washington to urge Secretary Wallace to press for some means of reestablishing price ratios. Taylor did not visit the winter wheat region of Kansas and Oklahoma as had been planned. President Jardine of the Kansas College of Agriculture wired President Coolidge asking that Taylor not be sent to Kansas. The President asked Wallace to call Taylor to Washington to report on his findings. Taylor started East within 24 hours and prepared a report for the President.

but he never had a chance to present it to anyone in the White House offices. Just how the idea became prevalent in White House circles that, by making a series of "speeches" throughout the Northwest, Taylor had aroused the farmers to press for farm relief in Washington we do not know. But that belief was lodged there, and Taylor had no chance to present the truth to the President. It can be said, however, that the group meetings attended by Taylor doubtless gave the impression that Wallace was deeply concerned and ready to listen to representatives of the farmers, which was true.[2]

Self-help as well as federal aid was discussed by the groups with which Taylor met while on that western trip. Agricultural readjustment was always on Taylor's mind as a means of solving farm price problems. That was the central idea in the *Agricultural Outlook Reports* he had initiated in the spring of 1923.

Montana had too many small farms patterned after those of the humid areas farther east from which the settlers came. M. L. Wilson and Chester Davis described the need for agricultural readjustments in Montana which would enable farmers to operate on a larger scale and on a more diversified plan which would enable them to make a living by producing grain and livestock at lower costs and on narrower margins per unit of product. Taylor made a suggestion based upon his experience in reshaping the agriculture on two farms in Wisconsin. John D. Rockefeller, Jr., provided the funds. The Fairway Farms Corporation of Montana[3] was organized with M. L. Wilson as Managing Director, and an experiment was started which was intended to demonstrate a more profitable type of farming. It included also the idea of facilitating the acquisition of land by farmers — an idea made use of by the Farm Security Administration in Washington which adopted the "tenant-purchase-contract" as developed in the Fairway Farms experiment.

Secretary Wallace made a statement in the *Yearbook* for 1923 concerning the agricultural situation at that time and the current proposals for giving aid to farmers. We quote that statement and the Secretary's comments, which show the trend of his thinking at that time:

> Notwithstanding the progress made toward better times, and notwithstanding all that has been done so well by both legislative and administrative agencies, it ought to be understood clearly that there is still room for much improvement in the state of agriculture and that we can not reasonably expect to attain to that condition of national prosperity for which we hope so earnestly until the farm group, which comprises about 30 per cent of our total population, gets its fair share of the national income and is able to sell the products of its labor at prices fairly relative to prices of what it buys. Industry, commerce, and industrial labor may prosper for a time at the ex-

[2] The report prepared for President Coolidge, on which the above statement is based, is in *A Farm Economist in Washington* (unpublished manuscript, 1925), Chapters XXI, XXII, XXIII.

[3] M. L. Wilson, "The Fairway Farms Project," *The Journal of Land and Public Utility Economics*, 2:156–71 (April 1926).

pense of agriculture, as indeed they have during the past three years, but the longer that continues the more hurtful to the Nation will be the results. The truth of the statement that in the United States national prosperity must rest on a sound and prosperous agriculture stands unchallenged.

Producers of those crops which are practically all consumed at home are in the main finding themselves able to make such readjustments as are necessary to meet changing markets and prices and are doing so with a courage that commands admiration. In the case of some crops time will be required to make these readjustments, especially in regions remote from markets which were brought under production because of favorable freight rates covering long distances. The advance in freight rates has worked great hardship in some of these regions, and if maintained will make necessary a change of markets or of crops. By and large, however, growers of home-consumed crops will gradually adapt themselves to changed conditions, even though at considerable loss.

The case is very different, however, with producers of those crops of which we export a considerable surplus and the price of which is largely influenced by large exports from competing countries which enter the world stream as it flows to points of consumption. Under present conditions these producers find themselves producing at costs beyond their control and which make it impossible for them to compete and live decently. The condition of the wheat grower serves to illustrate the difficulty. He has been producing at practically war costs and is meeting competition which forces him to sell at prices well below the actual cost of production. The result is that those farmers who depend mainly, or even largely, on wheat as a source of income are going back steadily year by year. Thousands of them already have gone bankrupt, and more are well on the way.

. . . it may be well to note here some of the suggestions which have been made by various persons as to ways by which the wheat grower might be helped out of his distressing situation.

Reduction of acreage. Since the acreage was largely increased to meet war demands, and since we now have a surplus, reduced production is looked to at once as the obvious cure.

Diversification—the growing of other crops from which part of the necessary income may be derived.

The organization of the wheat growers into a powerful cooperative.

The fixing by the Government of an arbitrary price which will cover cost of production.

Liberalizing the immigration law to bring in farm laborers and thus reduce cost of production. Also to bring in industrial workers in the hope of reducing industrial wages.

An increase in the tariff.

The purchase of the surplus by the Government and storing it against a time of short production.

The sale of fifty to one hundred million bushels to European Governments whose people can not afford to buy, but who are in urgent need of food.

The purchase of the surplus by a Government agency and selling it at a lower price in the world market. . . .

Reduction of acreage has been taking place at a rate much greater than is generally realized. The acres of wheat harvested increased from 47,000,000 before the war to a peak of 75,000,000 in 1919. From that high point the acreage has shrunk to 58,000,000 the current year. This shrinkage has been due to the substitution of other crops for wheat where such substitution offered a possible profit, to the abandonment of wheat farms in regions where because of repeated crop failures or financial stress such abandonment

was forced, and to the reduction of acreage on other farms and ranches because of shortage of labor at a price the wheat grower could afford to pay. The acreage in wheat is still larger than is necessary to meet the needs of home consumption, assuming that we have normal crop years, and reduction is going on. It must be kept in mind, however, that in large areas of the West and Northwest soil and climate are better adapted to the production of wheat than any other crop. Farmers in those sections are fixed for growing wheat, their farm equipment is adapted to it. They can not all at once change to another crop, even if some other crop gave fair assurance of profit. On the whole, the shrinkage in acreage has been as rapid as could be expected.

In many sections of the country which heretofore have specialized on wheat substantial progress has been made in diversification. . . .

The idea that the Government can arbitrarily fix a price that will cover cost of production and by this means restore prosperity to the wheat grower is no longer entertained by any considerable number. It is clear that such a course would simply stimulate production, not alone in the wheat country proper but in the great humid sections which can produce large crops of winter wheat, and will if the price is more attractive than the prices of corn and oats. A Government fixed price would make it necessary for the Government to be prepared to buy at that price, and without some means of disposing of the surplus bought our last state would be worse than the present.

The bringing in of foreign farm labors with the thought of reducing production costs through cheaper farm labor seems visionary. The pull of higher industrial wages would operate about as effectively on them as on our own people. If they should stay on the farms and thereby increase production, that would hurt rather than help, for we already have more farm production in important crops than can be sold at a fair price. A large increase in labor in the industrial centers might tend to reduce costs of the things the farmer buys and would add that many more mouths to be fed here.

The purchase and holding by the Government of our surplus wheat might prove of temporary help, provided an advance in price, which is the object sought, should be protected by the necessary advance in the tariff. The existence of a large surplus, however, would exert a constant downward pressure on the price of the next crop, large or small. Unless production is controlled, an annual crop, except for a reasonable carry over, must be sold annually.

The proposal to sell a considerable part of our surplus to some country which can not buy for cash but which is in urgent need of food is worthy of consideration. This would involve selling on long time and taking evidences of indebtedness, issued by State or municipal governments, calling for payment over a term of years. Commercial exporters can not extend credit for the length of time needed nor safely take the risks involved, but the Government, through some suitable agency, might well consider it. Such plan contemplates the free distribution of the wheat, or preferably flour, by the purchasing government and the amount thus sold would be taken out of the competing market.

The existing tariff has given a substantial measure of protection to the growers of certain varieties of wheat but not sufficient to make good the difference in cost of production and marketing here and in some competing countries when all factors are considered. Any effort which has the effect of advancing wheat prices at home must be supported by an advance in the tariff on wheat. . . .

The organization of wheat growers into a successful powerful cooperative marketing association might enable them to control the flow of wheat to

market more effectively and to reduce marketing costs. It ought to be possible, although admittedly difficult, to adapt to wheat marketing the methods which have proved successful in the marketing of many other farm products. But the amalgamation of the many existing associations into one powerful body and bringing into it the large number still unorganized is the work of years. Even if it were done now, the fundamental difficulties of the wheat grower right now are too deep-seated to be eliminated by such an organization.

The proposal, which has been advanced and considered from time to time for two years past, to set up a Government agency with broad powers to buy and export wheat and other agricultural commodities of which we produce a large exportable surplus, is in my judgment one of the proposals which like several others is worthy of renewed consideration at the present time. The objective to be attained is to secure for wheat and other agricultural products an exchange value approximately equal to what it was before the war. As has been said often, one of the chief causes of the agricultural depression is that farm commodities are relatively far cheaper than before the war. The price of wheat in dollars at terminal markets is not far from pre-war prices in dollars, but a bushel of wheat on the farm will buy much less of the things farmers need or desire than before the war. The end sought, therefore, is to put farm products on a price plane comparable with the price plane of other commodities.

The proposal in question contemplates the setting up of a Government export commission charged with the duty of disposing of the surplus in the form of wheat or flour in such a manner that the domestic price may rise behind an adequate tariff barrier to the point of restoring the pre-war purchasing power of wheat in the domestic market. Such an agency would need money with which to operate, and it is proposed to start it with a working capital of, say, $50,000,000, that being the approximate sum which the Government made in the way of profit by its war-time handling of wheat and flour when the price of wheat was arbitrarily controlled and held below the price at which it would have sold without such control. In case losses should be incurred because of the character of its operations, it is proposed to recover the losses through the levy of an excise tax on the crop of wheat itself. In the end the cost would be paid, not out of the Public Treasury but from assessment on the growers benefited and should not be large.

That in briefest form is the essence of the plan suggested. It is not a proposal for price fixing, as that is generally understood. It might be described as a plan to give the wheat grower the measure of protection which is given to so many other groups by making fully effective the principle of the protective tariff on a commodity of which we produce a surplus and which is suffering from destructive competition in a depressed foreign market. Or it may be described as a plan by which the Government, without material loss to itself, undertakes to do for the wheat growers what they can not now do for themselves—bring them into a general wheat pool through the operation of which they may secure a fair price.[4]

That statement may be looked upon as the beginning of a change in official thought in Washington on the subject of prices. As early as 1840, at least, the official view had been that when both seller and buyer are informed, the supply and demand price would be a fair price. In Wallace's 1923 statement, supply and demand are recognized as basic factors, but the thought was emerging that price as determined by supply and demand might fail to be a fair price,

[4] U.S.D.A. *Yearbook*, 1923 (Washington, 1924), pp. 13–18.

that the purchasing power of farm products should be stabilized on a fair basis. That kind of official thinking gradually gained ground until, in 1929, the Federal Farm Board was created to support prices. That the old supply-demand theory of prices was not discarded is evidenced by the fact that the Farm Board soon realized that production must be limited if price levels were to be raised, and by the fact that the first steps taken by the AAA in 1933 was to limit the supply of major staples with a view to obtaining higher prices.

But while thought was turning, in the 1920's, toward government influence in the control of prices, most of the research, educational and service work of the federal and state workers in agricultural economics continued on the basis of the theory that prices are the resultant of the forces and conditions lying behind supply and demand and that fair prices must be sought through adjusted production and expanding markets.

23.

Marketing Services of the U.S.D.A., 1921-32

In a previous chapter it has been noted that a few universities and agricultural colleges had manifested an interest in agricultural marketing during the years when Houston and Brand were laying the foundations of the Bureau of Markets. In the years that followed there was a close relation between marketing work in the U. S. Department of Agriculture and in the state agencies. The Department took the lead in the development of grades and standards and many of the states participated by helping to make them effective in specific areas. Likewise, fruit and vegetable inspection work was initiated by the Department and, in due course, was made effective at shipping points through the co-operation of the state bureaus of markets. Market news service was developed primarily by the U. S. Department of Agriculture.

Marketing research developed rapidly in the Department and in the states, particularly after passage of the Purnell Act of 1925[1] providing special funds for agricultural economic research in the states. Much of the work in the states, but by no means all, followed patterns agreed upon by the states and Department of Agriculture. In the following chapters the story of the development of marketing service and research from 1921 to 1932 will be carried forward as one more or less closely co-ordinated undertaking in the Department of Agriculture and in the states. The federal government carried the major load of service work, but the states did by far the greater amount

[1] Signed by President Coolidge, Feb. 24, 1925. The act specified that the funds be used for paying "the necessary expenses of conducting investigations or making experiments bearing directly on the production, manufacture, preparation, use, distribution, and marketing of agricultural products and including such scientific researches as have for their purpose the establishment and maintenance of a permanent and efficient agricultural industry, and such economic and sociological investigations as have for their purpose the development and improvement of the rural home and rural life," *U. S. Statutes at Large*, 43:971. See also J. L. Hills and E. W. Allen, "The History of the Purnell Bill," Association of Land-Grant Colleges, *Proceedings*, 1925 (Burlington, Vt., 1926), pp. 63–68.

of research work. In that work many of the studies related both to supply and to demand for specific products as well as to marketing agencies and processes of marketing. Dealing with marketing problems in that broad way was facilitated by the reorganization that unified the economic work of the Department of Agriculture in the Bureau of Agricultural Economics.

The Economic Work Consolidated

When Henry C. Wallace became Secretary of Agriculture on March 5, 1921, he manifested a deep interest in the work of the Department as it related to the economic problems of the farmer. He surveyed the economic activities of the Department and asked how well the services were meeting the needs of the farmers and how the organization and scope of the work could be improved. In his first report to the President of the United States he explained:

> Had we in the past given as much attention to the economics of agriculture as we have to stimulating production, it is not too much to say that at least some of the troubles which now beset us might have been anticipated and avoided. . . . To make sure that nothing might be done without due thought, I appointed an economic council . . . and asked them to consider the economic work of the department and make their recommendations.[2]

One by one current farm problems were studied by the council: the sheep situation, the cattle situation, the corn-hog and wheat situations, and conditions in the Cotton Belt. Committees worked on various phases until a considerable number of workers in the Department were thinking about ways and means of solving the farmer's economic problems. Then, late in June, 1921, the Secretary asked the members of his economic council to make suggestions for organizing the economic work of the Department in order to make it more effective. H. C. Taylor had anticipated that request and had a plan ready to present to Secretary Wallace. That plan called for the consolidation of the Bureau of Crop Estimates, the Bureau of Markets, and the Office of Farm Management and Farm Economics into a Bureau of Agricultural Economics. Taylor presented the plan to Wallace and told him that in the new bureau he would like a position as director of economic research under a competent chief. Taylor then left Washington for several days. While he was away Wallace called in a representative group of Land-Grant College men to discuss with him and the economic council the proposal to consolidate the economic work of the Department of Agriculture. "These gentlemen were much pleased with the plan proposed and pronounced

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[2] U.S.D.A., *Yearbook*, 1921 (Washington, 1922) p. 16, and U.S.D.A., *Weekly News Letter* (August 31, 1921), p. 5. Members of the economic council were: E. D. Ball, Assistant Secretary of Agriculture; W. A. Taylor, Chief of the Bureau of Plant Industry; J. R. Mohler, Chief of the Bureau of Animal Industry; L. M. Estabrook, Chief of the Bureau of Crop Estimates; and H. C. Taylor, Chief of the Office of Farm Management and Farm Economics.

it the most forward-looking program undertaken by the department in many years."[3]

Secretary H. C. Wallace told the story in his annual report as follows:

. . . Several highly qualified men[4] from different parts of the country were then asked to come to Washington and go over the plans submitted. They did this and approved the plans, which contemplate the consolidation of the Bureau of Crop Estimates, the Bureau of Markets, and the Office of Farm Management and Farm Economics, and the rearranging of the work of these three bureaus under appropriate divisions.[5] Not having authority to formally complete such consolidation, I consulted with various members of the agricultural committees of the Senate and House, and upon receiving their approval ordered that the work be so arranged as to virtually effect the consolidation. . . .

I have suggested that the name of this new bureau should be the Bureau of Agricultural Economics. It is proposed to merge into this one bureau all the forces of the department which are engaged in agricultural economic work. The purpose is to inquire into every economic condition and force which has an influence upon either production or price, for the one depends upon the other. We shall begin with the study of farm management, types of farming, cost factors, market grades, and practices as they bear on farm management. The cost of production and distribution will be studied at each stage along the way. Investigations will be made in land economics with a view to encouraging a wholesome system of land tenure; land resources and utilization; land settlement and colonization; the marketing of farm products with a view to better organizing distribution; market conditions, standardization, and grading of products; collection of statistics of production and distribution; crop and live-stock production both in the United States and in foreign lands; prices of farm manufactured products; historical and geographical studies in production and distribution with a view to interpreting the trend of agricultural prices and production, the development or decline of markets, and generally the geography of the world's agriculture methods of finance; insurance of buildings, live stock, and stocks in storage; taxation and its relation to production and distribution; the financing of rural public utilities and other group enterprises; agricultural conditions in countries which compete with the United States; the characteristics and changes in rural home life and its relation to agriculture; the trend of agriculture and population; in short, everything which may be helpful to the farmer in producing with judgment. Such studies and investigations will be just as helpful to the consumers as to the producers, for the ultimate purpose is to make sure that our people are abundantly supplied with the products of the soil at prices which will both sustain our agriculture and be just to the consumer.

Much of the work outlined above already has been under way in the

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[3] U.S.D.A., *Weekly News Letter* (August 31, 1921), p. 5. The Land-Grant College men were: T. F. Hunt, Dean of the College of Agriculture, University of California, and the champion of agricultural economists in the Association of Land-Grant Colleges; Andrew Boss, Professor of Farm Management, University of Minnesota; G. F. Warren, Professor of Farm Management, Cornell University; G. I. Christie, Director of the Indiana Experiment Station, Purdue University; and Professor T. F. Cooper, Dean and Director of the University of Kentucky Agricultural College and Experiment Station.

[4] See footnote 3.

[5] The advisory committee proposed that the new bureau utilize the three former chiefs. When the question was raised as to who should be made Chief of the new bureau, L. M. Estabrook made a motion that H. C. Taylor be made Chief of the Bureau of Agricultural nomics. Dr. J. R. Mohler moved that L. M. Estabrook be made Associate Chief. George Livingston was nominated as another Associate Chief.

department, some of it for many years, but I am sure that this bringing together in one bureau of the major economic projects of the department will both reduce expense and make possible the better working out of these projects.[6]

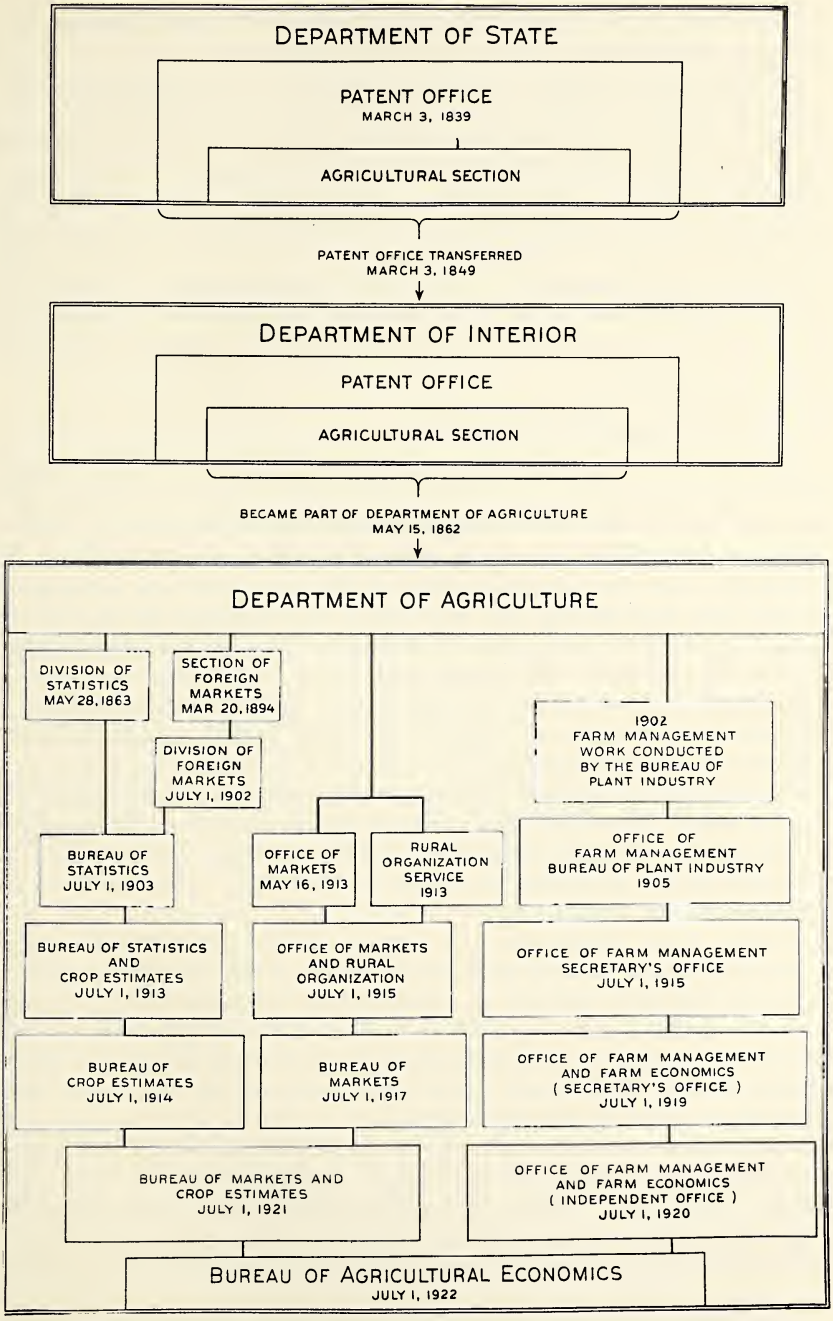
In accordance with the proposed plans the Bureau of Crop Estimates and the Bureau of Markets were combined on July 1, 1921, under the name of the Bureau of Markets and Crop Estimates. Functionally, the Office of Farm Management and Farm Economics, with G. W. Forster acting in charge, was a part of the above combination; legally, the consolidation was completed a year later. H. C. Taylor was appointed Chief and L. M. Estabrook Associate Chief of the Bureau of Markets and Crop Estimates for the interim year, July 1, 1921, to July 1, 1922, and, as has already been indicated, continued in those positions of leadership in the Bureau of Agricultural Economics which was legally established on July 1, 1922.

H. C. Taylor's first task was to inventory the resources, human and fiscal, available in the combined bureaus and lay plans for improving and redirecting the work without stopping the machinery. In this he had the loyal co-operation of the division leaders. When the 1,800 employees, brought together in the newly organized Bureau, were surveyed from the standpoint of the new work being planned, it became clear that many of them needed additional training along specific lines. Efforts were made at once to improve the service by expanding the in-service training which had been intiated in the Office of Farm Management and Farm Economics. Special courses in economics and statistics were organized. That in-service training idea developed and also spread to other bureaus and other subjects and, in due course, became the Graduate School of the U. S. Department of Agriculture.

In offering opportunities for members of the staff to increase their usefulness, the Chief held before them the objectives to be attained, the methods of work essential to attaining those ends, and the training essential to successful prosecution of the work. He declared that every member of the staff who caught the vision and prepared himself for efficient work would have opportunity for a career in the Bureau.

Monday morning conferences were inaugurated, which not only gave Taylor an opportunity to put his ideas before the division leaders but enabled each leader to keep the other leaders informed as to his work. Those conferences continued throughout Taylor's leadership of the Bureau and did much to knit the organization into a unified whole, with each part contributing to the progress of the others with a maximum of good will. Moreover, those interchanges of information and ideas encouraged group thinking and kept the purpose of the Bureau clearly in view. That purpose was to give information and render service which would enable farmers to

[6] U.S.D.A., *Yearbook*, 1921 (Washington, 1922), pp. 16–18.



Stages in the Development of the Bureau of Agricultural Economics.

see the fabric of the economic life of which they are a part and to adjust their production and marketing accordingly.

While much thought was given to causes of unfavorable price ratios in those formative years of the Bureau of Agricultural Economics, the Bureau continued to function in the field of prices and markets in line with authorizations and appropriations of Congress. Standardization of farm products, market news, service to the cooperatives, and the study of price trends and price ratios constituted the major work in that field. The story of the work in connection with grades and standards, market news, shipping point and central market inspection of fruits and vegetables, will be taken up first. The development of research in marketing from 1921 through 1932 will then be reviewed.

Administration of Grain Standards

When the marketing work became a part of the consolidated Bureau of Agricultural Economics, the development of grain standards was in its second stage. The U. S. Grain Standards Act was passed on August 11, 1916,[7] before the United States entered World War I, (1914–18), but the administration of the standards was influenced by the fact that during the war wheat was handled by the U. S. Grain Corporation. As a result the real problems of administration of the grain standards arose after the Grain Corporation had ceased to function. Prior to the days of federal standards, each grain exchange or each state had its own grain standards. These standards were different in different parts of the country. Uniformity of grade and administration, so necessary if foreign buyers were to get satisfaction, did not exist. The value of a contract to buy grain was determined by the quality of grain required to fill it, and that varied with the standards of the particular exchange in accordance with whose rules the contract was drawn.

Under those conditions the farmer could not interpret price quotations of the various markets in terms of his own grain unless he knew, for each market, the descriptions of grain corresponding to the designated grades quoted. A further difficulty grew out of the fact that exchanges in competing ports controlled the grades and their administration. Individual ports were tempted to let down the standard in order to attract exporters.

To facilitate both domestic and foreign trade and set up a uniform basis for grain market news, federal grain standards were established. An effort was made to formulate standards similar to those in use in the central markets, but, of course, uniform throughout the United States for any given kind of grain. The differences between the state,

[7] *U. S. Statutes at Large,* 39:482–93. See also A. C. True, "A History of Agricultural Experimentation and Research in the United States, 1607–1925," U.S.D.A., *Miscellaneous Publication* 251 (Washington, 1937), p. 217.

or exchange, standards in certain instances became the occasion for long-drawn-out controversies which required careful attention.

Another occasion for conflict between the states and the federal government under the Grain Standards Act was the fact that the act does not provide for the inspection of grain in the first instance by the federal department but provides that the U. S. Department of Agriculture shall supervise the work done by state or exchange inspection departments. Control over inspection departments is provided by requiring inspectors of the states and exchanges to be federally licensed, and by providing that appeals may be made to the U. S. Department of Agriculture in case either party is dissatisfied with the sampling or grading of the samples.

The establishing of United States standards for grain necessitated a change in the grading in some of the states. It also made necessary the abandonment of certain detrimental practices. That gave rise to problems which required the attention of the Bureau of Agricultural Economics.

One of the first problems in the Pacific Northwest grew out of the fact that members of the Portland Chamber of Commerce were selling grain to foreign countries on Chamber of Commerce "types," standards which conflicted with those of the new federal act. These "types" were made up each year and were said to be of the fair average quality of the crop of the year for which they were made. Thus the standard was a floating standard varying from year to year according to the quality of the crop. Whether it was a good or bad system economically, the enactment of the U. S. Grain Standards Act made it illegal and many looked upon it as bad. Chester Morrill, Assistant Chief of the Bureau of Markets and Crop Estimates, was sent to Portland in the autumn of 1921 to hold a hearing and to report to the Secretary, with the result that the Chamber of Commerce of Portland was asked by the Secretary of Agriculture to "cease and desist," effective July 1, 1922.

The second difficulty in the Pacific Northwest centered in the state of Washington, and particularly in the State Department of Agriculture. E. L. French, the Director of Agriculture, considered the Federal Grain Supervisors too strict in their enforcement of the rules regarding smutty grain. He acted on the assumption that, if more grain were allowed to pass as free from smut, the farmers would get more for their grain; whereas, actually, the producer of smut-free grain would suffer by having his grain classed for export purposes along with grain containing damaging quantities of smut. Furthermore, French promulgated a similar fallacy regarding the weight of No. 1 white winter wheat. He apparently believed that farmers would get more for their grain if more of it were classed as No. 1, even though the standard requirement for that grade was reduced two pounds per bushel in test weight. It is theoretically possible that

some farmers would benefit, but it is certain that those who produced wheat that tested sixty pounds or better would suffer by having to sell on a fifty-eight pound basis.

Another complaint from the state of Washington grew out of the fact that the U. S. Grain Standards placed special limitations upon the amounts of white winter wheat which would be tolerated in hard red spring wheat classes. This was done in the first place to prevent the mixing of cheaper wheats with the more valuable in the mixing houses. Furthermore, white wheat in the bin with the red gave the red wheat a bad appearance. With these objections to United States standards and their administration in mind, the Director of Agriculture of the state of Washington started a campaign with the purported purpose of teaching farmers and local elevator men the use of the federal grain standards, but which partook of the character of propaganda against the standards, and particularly against federal supervision of the inspection work of the State Department of Agriculture. On one occasion a large cargo of clearly smutty wheat was finally certificated out as smut-free by the state grain inspector, although the federal supervisor protested. Of course the license of the state inspector who made the certification had to be suspended.

The situation in the state of Washington was studied carefully by the Bureau of Agricultural Economics. Several public conferences were held in the state in March, 1924. While the motives of the State Director of Agriculture turned out to be political, the conferences were so conducted as to prove educational to the men from the U. S. Department of Agriculture as well as to the farmers. Political aspects were kept out of the meetings. Fortunately, there were plenty of men in each of the state of Washington conferences to maintain a fair balance in the meetings and promote clear thinking. The standards came to be regarded much more highly by the farmers than they had been at the beginning of the conferences.

As a result of the conferences, the special limitations on the amount of white wheat permissible in the hard, red spring wheat were removed. This benefited farmers of the Big Bend country who produced hard, red spring wheat but who, because of their proximity to the white wheat area, and because of the intermixing of the areas, and particularly because of the seeding of spring wheat after a fall wheat crop had failed, found it difficult to keep white wheat out of the red. The conferences stimulated the Bureau of Agricultural Economics to investigate better methods of cleaning smutty grain and more accurate methods to be used by the licensed grain inspectors in determining the amount of smut present in given samples of grain.

The grain standards controversy in Minnesota was opened in a Congressional hearing held in Washington in midsummer 1921.[8]

[8] See U. S. Congress, Committee on Agriculture, *Grades for Spring Wheat, Hearings* on House Report 7401, June 27–30, July 2, 1921, Serial J (67th Congress, 1st Session, Washington, 1921).

Minnesota farmers preferred the standards that were in effect prior to the establishment of federal standards. There were two reasons for that: First, the farmers were accustomed to the old state standards; second, the requirements were higher in the federal standards than in the old Minnesota standards. Furthermore, during World War I, prices were fixed with specific differences for each grade, so that the higher wheat was graded the higher the price. Under that price fixing system farmers got more for inferior grain if the standards were low and thus let more of the wheat into the upper grades. It was hard to convince the farmers that such a result was no longer obtainable after federal price fixing stopped. Representatives of farmers of the spring wheat territory still wanted modification of the federal standards to let more grain into the upper grades.[9]

At that Congressional hearing of 1921 special objection was made by the Minnesota delegation to grading down wheat because it contained inseparable foreign material, such as kingheads, cockle, and wild peas. These seeds were not removed by ordinary methods of cleaning wheat for the purpose of determining dockage. The inseparable material was counted as wheat, not as dockage, but the wheat was graded down according to the quantity of "inseparable" foreign material it contained. Samples brought by the Minnesota delegation to the hearings showed how wheat that would grade as No. 1, because of the wonderfully fine quality of the individual kernels, could be graded down to No. 5 because of the intermixture of a small percentage of wild peas. The argument was that wheat should be graded "as wheat," regardless of what was mixed with it. It was advocated also that moisture should not be a grading factor, that a maximum amount of moisture should be named and allowed alike in all grades of wheat.

Following that hearing the Bureau of Agricultural Economics appointed L. A. Fitz, of the Kansas Agricultural College, an expert experimental miller, and John Lee Coulter, of the West Virginia Agricultural College, an agricultural economist familiar with wheat-growing conditions in the Red River Valley, to work with the regular staff of the grain division of the Bureau. They were to study the problems of grading in the spring wheat area with the view of formulating a plan for modifying standards in such a way as to reflect the milling value of the wheat back to the farmer. These men spent the summer and fall of 1921 assembling material. After a series of conferences, the Fitz-Coulter plan was formulated.

In that plan the idea that wheat should be graded as wheat was accepted, but the plan provided that in case wheat contained "inseparables" this fact should be stated on the certificate. Under this plan the samples of wheat which had been shown to the Congressional committee in Washington would grade No. 1 instead of No. 5 but

[9] For details of their complaints, see *Grades for Spring Wheat.*

would be labeled as containing a certain percentage of a specified inseparable. The plan proposed to:

> Change the moisture content requirements of all the grades of the Federal wheat standards so as to limit to 14 per cent the amount of moisture that may be contained in any grade, and insert a new section in the Federal standards as follows:
>
> *Sec. 26.* Excess-moisture wheat: Excess-moisture wheat shall be all wheat which contains more than 14 per cent of moisture. Excessive-moisture wheat shall be graded and designated according to the grade requirements of the standard applicable to such wheat if it were not excess-moisture wheat, and there shall be added to and made a part of its grade designation the words "excess moisture."[10]

It was understood that this plan met the demands of the delegation from the spring wheat region of the Northwest and satisfied the committee in Congress. Hearings were held in Kansas City and in Chicago in April, 1922[11] to determine the attitude of the farmers and the trade on the Fitz-Coulter proposal. The trade was found to be opposed to change.

The argument against the proposal was that it placed an even greater penalty upon wheat containing inseparable foreign material than did the system in use. It essentially provided a series of off grades which might have no published market quotations and which would not be deliverable on contract. In reply to that point of view, Fitz and Coulter argued that the farmer who produced the clean wheat was the one who deserved special consideration and that the producer of seedy wheat should be penalized. Now it happened that this was just the opposite doctrine from that which had stirred up the question in the first place, for it was the producer of seedy wheat who was to be protected by the lobbyists who had come to Washington. The way in which an agreement was reached on the Minnesota issue is presented here as written by H. C. Taylor in 1925:

> After holding the conferences and returning to Washington, I had not been in my office ten minutes when a call came from the Minnesota Congressman asking me to come to see him. On arriving at his office, Morrill and I found that Congressman and a group of his colleagues much excited over the fact that O. P. B. Jacobson (charged with the administration of the grain standards in Minnesota) had come out strongly against the proposed changes in the grain standards. The Congressman wanted to know if the plan could not be changed or dropped.
>
> Morrill and I had anticipated that turn of events and were ready to propose an alternative. Our plan was essentially as follows: For the present at least we would continue the present system of grading the wheat, but on every certificate showing wheat graded down because of inseparable foreign materials the "otherwise grade" would be noted on the certificate. Then when this sample was sold on the floor of the exchange, the price at which it was sold would be obtained and made public in order to establish the commercial differences in value of the "otherwise grades." It was pointed out

[10] *Grades for Spring Wheat,* Serial J (2nd supplement), June 5, 1922, p. 335.

[11] See typewritten verbatim reports of conferences held in Kansas City, April 7, 1922, and in Chicago, April 10, 1922, to discuss changes in wheat grades proposed by L. A. Fitz and J. L. Coulter.

that this would render all the service that could be hoped for from the Fitz-Coulter plan without throwing the grain out of the standard grades and disqualifying it for contract purposes.

It was further proposed that the U. S. Department of Agriculture should cooperate with the State extension agencies in Minnesota and the Dakotas in putting on "Know your own wheat" campaigns with a view to teaching farmers to sell on the basis of quality, to know what they were about, and ultimately to appreciate the importance of producing clean wheat.

That proposal met with hearty approval by the informal group of northwestern Congressmen to whom it was presented. When the alternate plan was presented to the Secretary of Agriculture the same morning, he looked at us incredulously and said, "How long does it take one to get that way in Washington?" He had assumed that we had come to recommend the Fitz-Coulter plan to him for final approval. A half hour later I was again called to the Secretary's office and, upon entering, found the Secretary explaining the alternate plan to Congressman Sydney Anderson. He wanted me to amplify some of his statements. The alternate plan, when fully elucidated as a research and educational plan, was accepted by Secretary Wallace and by Congressman Anderson.

We put on the "Know your own wheat" campaign convinced that it was a good thing.

The following news release gave a brief statement of the procedures used in putting on the "Know your wheat" campaign:

"At a conference held June 13, 1922, at the Federal grain supervision office, 404 Flour Exchange, Minneapolis, tentative plans were drawn for putting into operation plans recently announced by the Secretary of Agriculture for a Market News service and a "know your wheat" campaign. At this conference were present Dr. H. C. Taylor, Chief of the Bureau of Markets and Crop Estimates, and other representatives of the Department of Agriculture, together with several of the extension workers of the spring-wheat territory, including W. F. Kumlien, State extension director, Brookings, S. Dak.; Gordon W. Randlett, extension director, Fargo, N. Dak.; S. B. Cleland and William L. Cavert, of the State extension service at St. Paul, Minn.

"At a conference held the preceding day between Doctor Taylor and officials of the Minneapolis Chamber of Commerce the cooperation of the chamber was promised in the building up of a Market News service at Minneapolis, which will be under the supervision of Mr. J. R. Mathewson. The aim of this service will be to furnish market reports which will reflect as nearly as possible the true market prices of the various qualities of wheat, not only of grades but of groups within grades.

"At the conference with the extension workers the following proposals were taken back to the respective States by the extension representatives present. It was proposed that schools of instruction be held in the principal spring-wheat States, at which representatives of the United States Department of Agriculture would furnish instruction to county extension workers who would later carry on the work in the "know your wheat" campaign in approximately 10 counties of each of the States of North Dakota, South Dakota, and Minnesota. The county agents in each of the counties chosen will be equipped with adequate apparatus and a laboratory, to which samples of wheat may be brought to be tested for dockage, test weight per measured bushel, such foreign material as may remain after the removal of dockage, which includes other grains (barley, rye, etc.), kingheads corn cockle, and wild peas, and also mixtures of wheats of other classes, also damaged grain and moisture where it is a problem."[12]

[12] A news release, quoted in U. S. Congress, Committee on Agriculture. *Grades for Spring Wheat, Hearings,* June 5, 1922, Serial J (2nd supplement), (67th Congress 2nd Session, Washington, 1922), p. 357.

We kept a record of all cases where the "otherwise grade" of wheat was higher than the grade under the established system. Two important facts came clearly into evidence as a result of further research made possible by the new material on the certificates: First, the total percentage of wheat coming to market with any large amount of inseparable material in it was very small. Second, a large part of the wheat containing inseparable foreign material was graded down for other reasons and was worth more on the basis of the system of grading then used than if the material in question were counted as dockage, subtracted from the weight, and ignored in grading.

After that the spring wheat area was rather quiet for nearly two years. The next outbreak of complaints from Minnesota came early in the spring of 1924. A committee headed by Jacobson came to Washington. They made their main attack upon the President and their secondary attack upon Congress, where they seem to have stimulated the organization of the "wheat bloc." In a few days Congressman Frank Clague, of Minnesota, the chairman of the "wheat bloc," called upon me and explained that they wanted wheat graded "as wheat;" that all inseparable foreign materials be classed as dockage. I explained to him our findings in that regard, how small was the total importance of the matter, and also called to his attention the fact that new wheat cleaning devices had been invented, that material which used to be inseparable was now separable, and that we wanted our system of grading to keep pace with commercial practice. He was shown a new machine which would take out wild peas and cockle, and he was told that the U. S. Department of Agriculture was ready to approve the use of new cleaning devices as standard equipment for removing dockage. This pleased the Congressman very much. It seemed to supply the thing which the Minnesota group had so long asked for. I explained that the equipment would cost something and that our appropriations had been cut just at a time when they should have been increased. The "grain bloc" not only restored the cut but added a much needed $50,000 to the appropriation, and the new grading machine went into use on the 1924 crop. The Minnesota inspectors used the machine very sparingly, for the cases where the farmer would benefit by its use were exceedingly rare. The wheat standards were not changed. Dockage continued to be subtracted from the weight and inseparables continued to be a grading factor.

The big difficulty in grain grading, which had not been touched by all this agitation, was the fact that any system of grading wheat, based upon its appearance, weight, and moisture content, will not be entirely satisfactory until a simple system of determining the protein value of wheat has been invented and incorporated into the administration of the standards.[13]

The farmers of the spring wheat region and of Kansas were especially interested in obtaining the premium paid by millers for high protein wheat. The College of Agriculture of Montana made studies of the problem of selling wheat on the basis of its protein content, and in 1926 issued a bulletin on that subject.[14] The high protein content of Montana wheat gives it a higher milling and baking value than wheat with a lower percentage of protein. If Montana wheat were uniformly high in protein, the problem of obtaining the deserved

[13] H. C. Taylor, *A Farm Economist in Washington, 1919–25,* (unpublished manuscript, 1925), pp. 151–55.

[14] W. O. Whitcomb and E. J. Bell, Jr., "The Protein Test in Marketing Wheat," Montana Agr. Exp. Sta. *Bulletin* 189 (Bozeman, 1926).

premium would be relatively simple, but that is not the case. The situation was stated as:

A large proportion of Montana's wheat is of high protein content. However, not all of our wheat is of this quality. The protein content of hard red spring wheat grown in Montana has been found to range from 9 to 19 per cent or more. The wide range of climatic and soil conditions tends to produce wheat of varying protein content in different sections of the state. Seasonal climatic variations also have an influence, as do tillage methods, in producing wheat with a variation in protein content.

In certain years some parts of the state are designated by buyers as high protein areas. Occasionally, practically all of the wheat coming from such an area may have a high protein content, while in other instances only a portion of the crop is high in protein. There is no assurance, however, that a high protein area will continue to produce such wheat. Climatic or other conditions may in other years cause the production of wheat with a low protein content. Even on the same farm different fields may give a different protein content. For example, on two fields, both of which were summer-fallowed, one farmer had 2 per cent higher protein in the wheat from one field than from the other in the same year.

Wide variation in the protein content of wheat from the same field may also occur, due to differences in (1) the lay of the land, (2) the character of soil, (3) tillage and cropping methods previously used, and (4) amount of moisture received on the different parts of the field. Therefore a protein test on the wheat threshed from one portion of a field is not always a fair indicator of the quality of wheat to be obtained from the entire field. In order to avoid misunderstandings between the wheat grower and the buyer the protein test should be made on a composite sample of the entire lot of wheat under consideration.[15]

The means of enlarging the market for Montana's high protein wheat was the subject of a circular issued in 1927. The summary stated:

Demands for Montana wheat now come from (1) terminal markets, (2) interior mills in the spring wheat area, (3) mills in the white wheat area, and (4) mills in the soft red winter wheat belt.

Present tendencies indicate that more wheat is being milled in the eastern soft winter wheat belt because it is close to consuming markets and a large supply of cheap wheat.

Pennsylvania was selected as an example of how contacts might be made with mills in it and similar states. . . .

Montana wheat is satisfactory from the standpoint of Pennsylvania mills but certain difficulties prevent direct connection:

a. The supply is not uniform.

b. Freight rates are high.

c. Financing long distance shipments is expensive.

d. Pennsylvania mills can sometimes get cheaper wheat from Canada. . . .

Some agency is needed to locate the sources of high protein wheat in Montana and arrange for a sufficient number of uniform shipments.[16]

Not only does the protein content of Montana wheat vary from

[15] Whitcomb and Bell, "The Protein Test," p. 8.

[16] E. J. Bell, Jr., "Larger Markets for Montana Wheat," Montana Agr. Exp. Sta. *Circular* 135 (Bozeman, 1927), p. 3.

place to place and from time to time, but the premium for high protein wheat also varies. The uncertainty of the premium was illustrated by this statement:

> . . . the 1925 crop had higher protein than that of 1924. Hence the premiums in August and early September, 1925, were about 10 to 11 cents per bushel for 13 per cent wheat. These premiums [in 1924] had advanced 6 or 7 cents by the latter part of October, so that 13 per cent protein was selling at a premium of 17 cents per bushel.
>
> In October and November, 1925, buyers noticed that they had all the high protein wheat they needed, but there was a shortage of heavy wheat. Then they began to pay more attention to test weight and less attention to protein until in the spring of 1926 *some cars of low protein wheat brought higher premiums than other cars of high protein wheat because of higher test weight.*[17]

The elevator manager had his worries in trying to pay premiums for high protein wheat. He had other worries arising from progress in methods of harvesting and transporting wheat. Those problems were discussed by E. J. Bell in a bulletin issued in 1930:

> The protein factor, the combine, and the motor truck have brought with them numerous and perplexing problems for the country grain buyer. The use of the protein test at Minneapolis and other markets has made it impossible for him to determine the market value of the wheat delivered without expensive laboratory equipment. Following premiums based on protein content, the cash market fluctuates to a certain extent independently of futures and the old hedging process no longer provides adequate protection against market risks. Attracted by offers of high premiums at the terminals many farmers ship their wheat direct and the local elevator loses this business.[18]

The Kansas Agricultural Experiment Station also studied the problem of realizing on the value of high protein wheat.[19]

Administration of Cotton Futures Act

Cotton grown in the United States had been marketed for more than a century before the federal government took a hand in standardizing and improving the marketing methods in use. In the meantime the cotton market had grown into an extremely complex thing regarding which the producer of cotton knew little. He knew the conditions under which cotton was sold in the small town where it was ginned. He may have known something of one or more of the many inland cities where bales of cotton were assembled from the small towns, and where the gin bales were compressed to reduce the cost of transportation. Larger cotton planters went from time to time to New Orleans, Houston, Galveston, Charleston or other cotton ports, and some even hedged their cotton in the New Orleans or

[17] E. J. Bell, Jr., "Marketing High Protein Wheat," Montana Agr. Exp. Sta. *Bulletin* 213 (Bozeman, 1928), p. 10.

[18] E. J. Bell, Jr., "Current Problems of Montana Farmers' Elevators," Montana Agr. Exp. Sta. *Bulletin* 226 (Bozeman, 1930), p. 7.

[19] See L. E. Call, R. M. Green, and C. O. Swanson, "How To Grow and Market High-Protein Wheat," Kansas Agr. Exp. Sta. *Circular* 114 (Manhattan, 1925).

New York futures market. But the rank and file of cotton producers knew little or nothing about what happened to their cotton after it left the local market. Neither did the farmer know the value of his cotton. Quotations of prices paid in various markets might be read in the papers, but the farmer didn't know the grade of cotton which corresponded to a given price quotation. In fact, the grading of cotton had not been standardized, and the grading differed from market to market. This lack of standard grades in all markets led to confusion in reading price quotations in the cash, as well as in the "futures" markets.

The Cotton Futures Act became a law August 18, 1914, became effective February 18, 1915, and was re-enacted with amendments August 11, 1916.[20] A summary of that effort on the part of the federal government to improve cotton marketing was given by Secretary Houston in his annual report for 1914:

> The Cotton Futures Act is the first definite, systematic, legal approach to the solution of difficult problems in this field of distribution. Interest in the economics of the cotton situation has grown rapidly in recent years and has been especially marked during the present season because of the difficulties arising out of the European war. For many years there has been a growing dissatisfaction with the future markets as a means of price insurance. The demand for reform in certain practices and methods of the exchanges resulted in the passage of the futures act, which is designed to increase the safety of the future contract as an insurance and to limit somewhat the possibility of manipulation.
>
> The enactment of this legislation is of importance to cotton growers because of the fact that in normal years the price when the farmer sells is usually based directly on the quotations of the future market. It is generally admitted that the undesirable features of future transactions are due to the number of different standards in use in the markets, to the fixed-difference system of establishing the value of other grades than middling, to the fact that very low qualities of cotton suitable for spinning use by only a few mills sometimes compose the larger part of the warehouse stock of an exchange and are deliverable on contract, to the fact that tenders of cotton under contracts do not indicate the qualities to be delivered, and to the fact that under the pro forma delivery practice several weeks sometimes elapse before the person who is obligated to receive cotton knows the grades tendered to him, for which he has contracted to pay at the time of delivery.
>
> The act, by prescribing a form of contract, provides that future contracts must be based on uniform standards established by the Department of Agriculture; prohibits the pro forma deliveries and the tendering of cotton of less than seven-eighths inch in staple in settlement of future contracts; provides for the settlements for grades above or below the basis grade in accordance with prevailing commercial differences; allows an appeal to the Department of Agriculture in case of a dispute as to grades, staple, or quality of cotton tendered in settlement; lodges power with the department to ascertain commercial differences actually prevailing in the spot markets, and thus to safeguard the exchanges from unintentional error which might subject their contracts to taxation; makes it the duty of the department to determine which are bona fide spot markets, and to designate the ones which shall be

[20] *U. S. Statutes at Large*, 38:693–98 and 39:476. See also A. C. True, "A History of Agricultural Experimentation and Research in the United States, 1607–1925," U.S.D.A., *Miscellaneous Publication* 251 (Washington, 1937), pp. 216–17.

used as a basis for determining commercial differences; and imposes a prohibitive tax upon contracts for the future delivery of cotton on a basis price if they do not conform to the terms of the act

. . . A new standard set of grades, more truly representative of American cotton than any hitherto in use, has been prepared. The requisite surveys have been set on foot, tentative regulations have been prepared, and hearings held with a view to secure advice and suggestions for the revision of the regulations and the adoption of them in their ultimate form.[21]

The ease with which the law was put into effect stands in marked contrast to the Grain Futures Act, the first version of which was declared unconstitutional.[22] That ready acceptance of the law is indicated in Secretary Houston's report for 1915:

After the passage of the act, even before it became operative, the cotton future exchanges in this country adopted the form of contract prescribed in its fifth section, and since, with negligible exceptions, they have traded exclusively under this form. Careful observation since the new form of contract came into use indicates that the statute has accomplished the chief economic objects anticipated by its framers. Future quotations now represent spot values more accurately; sharp and sudden fluctuations, such as commonly occurred under the old practices, have become much less frequent; and prices have been increasingly stabilized. The conclusion is unavoidable that these results are due mainly to the operation of the act.

Primarily these changes help the producer to secure more equitable prices. They also benefit the cotton manufacturer by giving him a truer index of the advance value of raw material. Likewise, they afford to all concerned in financing the crop and moving it to market a safer and more practicable hedge. In addition, the exchanges themselves have been somewhat relieved from the suspicion, which formerly justly attached in considerable measure, that exchange transactions were not always fairly conducted.[23]

In 1922 the Bureau of Agricultural Economics became responsible for the supervision of the determination of market differences in prices of different grades of cotton as a basis of settlement of future contracts; the preparation and promulgating of cotton standards which formed the basis of the classification of cotton for future delivery; and the classing of cotton tendered for delivery on future contracts in New York and New Orleans.

In addition to these functions, the Bureau continually observed the relationship between the price of spot cotton and the price of futures in the current month. While various problems arose, this relationship demanded more attention than did the classing of cotton for future delivery or the determining of market differences.

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[21] U.S.D.A., *Yearbook,* 1914 (Washington, 1915), pp. 33–35.

[22] "On September 21, 1922, Congress passed 'the grain futures act,' the purpose of which . . . is the prevention of obstructions and burdens upon interstate commerce in grain by regulating transactions on grain futures exchanges. This act was passed to take the place of 'the futures trading act' of August 24, 1921, declared unconstitutional by the Supreme Court on May 15, 1922 . . . . The futures trading act was based upon the taxing power of Congress. The court held that it was not passed for the purpose of raising revenue, but for the regulation of the grain exchanges, and was therefore unconstitutional.

"The new act . . . is based upon the power of Congress over interstate commerce." U.S.D.A., *Annual Report,* 1923 (Washington, 1924), p. 710. For the text of the Grain Futures Act, see *U. S. Statutes at Large,* 42:998.

[23] U.S.D.A., *Yearbook,* 1915 (Washington, 1916), p. 45.

The two phases of cotton marketing that received major attention from 1922 to 1925 were the improvement of the futures market as a form of commercial insurance and the development and extension of the use of cotton standards. The major difficulty that the Bureau encountered in administering the Cotton Futures Act grew out of the fact that trading in the New York market continued in the current month long after it was possible to ship cotton from the South to New York for the purpose of delivering it in fulfillment of contracts. This often resulted in a "squeeze" which sent the price too high. The timidity of merchants growing out of fear of a "squeeze" had a depressing influence on the market. This not only damaged the market as a hedging institution but disturbed spot markets. Complaints of this disturbance reached the Bureau from various points in the South and from certain European merchants who desired to hedge in the New York market.

In the spring of 1923 the New York futures market was far out of line with prices in the various spot markets. A letter was prepared by the Cotton Division, and signed by the Chief of the Bureau, warning officers of the New York Cotton Exchange that futures were out of line with spots and asking that something be done to improve the situation. In a short time the Bureau received notice that a committee on "southern deliveries" had been appointed to consider the practicability of establishing a number of delivery points in the South to avoid the difficulty arising because of the great distance between New York and the Cotton Belt. That committee asked members of the Bureau to sit with it from time to time. It soon became clear that there was much objection to having several points of delivery. It would cost the brokers a lot of money to be prepared to accept cotton at six different points in the South.

It appeared also that there was every probability that other difficulties would arise. Fixed differences between New York and the southern points would not be easy to determine because the relation between the price at a given southern point and New York would not remain the same throughout the season. For example, southern mill sections are surplus regions in the fall and early winter and deficit areas later in the cotton year, whereas western cotton concentration points are surplus markets throughout the season. Everything considered, the members of the New York Cotton Exchange were strongly against southern deliveries.

The Federal Trade Commission took a hand in the matter and held a hearing in Washington November 6–8, 1923,[24] in which the effort was to demonstrate that southern deliveries should be established by the New York Cotton Exchange as a means of eliminating the "squeeze." The hearing did not convince the Exchange membership that they wanted southern deliveries, but it stimulated them

[24] From minutes of the hearing, filed in the Federal Trade Commission.

to seek an alternative. They appeared not to object so much to the "squeeze" as to the fact that this defect was endangering the life of the Exchange, because the public would not stand for the evil.

During the committee meetings which had been held by the Exchange earlier in 1923 it had been suggested that, since the whole difficulty lay in the inability to get cotton from the South after the trading closed, the simple remedy was to stop trading at an earlier date in order to allow time for shipment. This suggestion did not take root at the time, but, while the Federal Trade Commission hearings were in progress, representatives of two of the largest firms of cotton brokers separately asked the Bureau of Agricultural Economics for aid in devising some means of eliminating the "squeeze" without southern deliveries, and suggested changing the final date of trading in the current month. This plan was talked over with the other members of the Exchange and gradually gained favor.

In the meantime the plans of the Chicago Board of Trade for organizing a cotton futures market had pushed on to the point of starting a market with southern delivery at Houston and Galveston. About that time the New York Cotton Exchange took action, effective in December, 1925, to end trading on the tenth day of the current month. Of course, all outstanding contracts had to be carried through as started. Once the action had been taken the Exchange was proud of itself for finding such a simple remedy for so serious an evil.

Universal Standards for American Cotton

Under the Cotton Futures Act,[25] which was in effect when the Bureaus were combined, the Bureau of Markets, under the administration of Charles J. Brand, established official cotton standards of the United States as a basis of classing cotton delivered on future contracts. These standards were duplicated and sold to anyone wanting a set or any part of a set. Thus the standards became commonly known in the United States and were used more and more often in the sale of spot cotton. The only other cotton standards extensively used in the foreign trade in American cotton were the Liverpool standards, which had been in use for many years and which formed the basis of the European trade in American cotton as well as the basis of arbitrations made in Europe. Comparatively few copies of the Liverpool standards were in existence. Many American shippers and European cotton spinners learned all that they knew about the standards from the results of the Liverpool arbitrations in which their cotton was involved. A few large American merchants had copies of the Liverpool standards, but the rank and file of shippers had to ship blind and accept the results of foreign arbitrations without recourse.

As time went on and the use of the United States standards became more common in this country as a basis of spot transactions, as well

[25] The Cotton Futures Act of August 18, 1914, was re-enacted with amendments in the Agricultural Appropriations Act of August 11, 1916. See footnote 20, p. 615.

as the one basis of future trading, the belief that it would be convenient to have universal standards for American cotton took root and grew. While the use of United States cotton standards in the export trade was being contemplated in the South, and was a subject of keen interest in the Cotton Division of the Bureau of Agricultural Economics, that subject did not come up for action on the part of the Secretary of Agriculture or the Chief of the Bureau until after the passage of the Cotton Standards Act[26] of March 4, 1923, commonly known as the Fulmer Act.

That act provided that after August 1, 1923, all cotton shipped in commerce on the basis of standards should be shipped on United States standards, and that any American shipper should have the right to make final appeal to a board of examiners established by the U. S. Department of Agriculture. This meant two things regarding the foreign trade in cotton: First, American cotton could no longer be exported on the basis of Liverpool standards; and second, American shippers might appeal from decisions of the Liverpool board of appeals, and the findings of the board, established by the U. S. Department of Agriculture to pass upon these appeals, would be final. Any contract which ignored this law would be illegal and not enforceable against an American shipper.

The enactment of that law set things in motion. The Liverpool Cotton Association became concerned and asked the Secretary of the U. S. Department of Agriculture for a conference. The American cotton trade knew the legislation was for their ultimate good but felt that the transition would be hard to make. For that reason they were unhappy under the threats of the Liverpool merchants who declared they would not do business on the basis of the American standards.

Lloyd S. Tenny, Assistant Chief of the Bureau of Agricultural Economics, and A. W. Palmer, of the Cotton Division, were sent through the South to explain the Cotton Standards Act at a series of conferences. They also gathered the sentiment of the cotton trade. The task was an unpleasant one. No one seemed to love the Fulmer Act. At that juncture Fulmer himself was said to be sorry he had fathered so unpopular a bill.

After the conferences in the South, the Secretary of Agriculture announced that he would meet with representatives of the cotton interests on the twenty-eighth day of May, 1923, for the purpose of considering anything they wished to present. The meeting was called to order by Secretary of Agriculture H. C. Wallace, who made it clear that the law would have to be enforced but that he wished to enforce it in as intelligent a manner as possible and in the interest of the cotton producers and distributors. Everyone present was asked to make a statement of his fears and his desires.

[26] Sponsored by Hampton P. Fulmer of South Carolina. See *U. S. Statutes at Large*, 42:1517. See also U.S.D.A., *Yearbook*, 1923 (Washington, 1924), p. 32.

It became clear that the delegates[27] approved of selling cotton abroad on United States standards but feared they would have difficulty the first year particularly because European buyers were not familiar with those standards. The delegates were asked to formulate a plan for making the transition from the old system to the new with the minimum of friction and interruption. A subcommittee of the delegates reported that if American shippers were permitted to define United States standards in terms of standards known in Europe the transition could be made easily. That meant that the contract should in each case be in terms of the American standards but the grade named might be described as the equivalent of some grade of a foreign standard, or above or below the designated foreign standard as the case might be. The delegates were asked if they would stand with the Department of Agriculture in negotiating for the universal standards for American cotton in case their proposal was acceded to by the Secretary. The delegates were ready to co-operate with the Department on that basis. Upon the recommendation of the Bureau of Agricultural Economics, the Secretary agreed to the proposal that United States standards might be defined in terms of other standards for a period not to exceed one year, if and on the condition that the American standards were adopted by the European cotton exchanges as the universal standards for American cotton.

That meeting established harmony between the U. S. Department of Agriculture and the American cotton trade. With that happy relation established, the Department of Agriculture was ready for a conference with the delegates of European cotton associations on June 11, 1923. Representatives were present from the Liverpool Cotton Association, Manchester Cotton Association, Federation of Master Cotton Spinners' Associations, and Havre Cotton Association. The Bremen Cotton Exchange, Rotterdam Cotton Association, and corresponding associations of Ghent, Barcelona, and Milan were represented by the Liverpool delegates. The American delegation was made up of representatives of the growers, merchants, and manufacturers.[28]

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[27] List of representatives of the American cotton trade who attended the conference called by the Secretary of Agriculture, May 28–29, 1923, and the organizations they represented:

C. W. Butler, C. W. Butler & Co. (Memphis Cotton Exchange); W. L. Clayton, Anderson, Clayton & Co. (Houston Cotton Exchange and Texas Cotton Association); J. W. Evans, J. W. Evans & Co. (Houston Cotton Exchange and Texas Cotton Association); R. T. Harriss, Harriss, Irby & Vose (New York Cotton Exchange); C. B. Howard, Sales Mgr., American Cotton Growers Exchange, Atlanta, Ga.; Samuel Hubbard, Jr., Hubbard Bros. & Co. (New York Cotton Exchange); J. L. Jones, Godwin, Jones & Co. (Houston Cotton Exchange and Texas Cotton Association); E. B. Norman, E. B. Norman & Co. (New Orleans Cotton Exchange); E. W. Porter, Porter, Weaver & Co. (Memphis Cotton Exchange); H. M. Rankin, Newberger, Rankin & Co. (New Orleans Cotton Exchange); M. P. Rivers, Geo. H. McFadden & Bros. (Savannah Cotton Exchange); W. S. Thomson, Philadelphia, Pa.; G. S. Willman, W. M. Hannay & Co. (Dallas Cotton Exchange and Texas Cotton Association).

Those present from the U.S.D.A. were: H. C. Wallace, Secretary of Agriculture; C. J. Brand, F. W. Knight, Chester Morrill, A. W. Palmer, H. C. Taylor, and L. S. Tenny.

[28] List of those present at the cotton conference, June 11, 1923:

EUROPEAN DELEGATES: *Liverpool Cotton Association*: A. C. Nickson, Secretary, J. G. Clayton, H. L. Roxburgh, and Cecil Taylor. *Manchester Cotton Association, Ltd.*: H. Robinson, Secretary, and W. Heaps. *Federation of Master Cotton Spinners and Manufacturers Association*: Cecil Hilton and Joseph Wild. *Syndicat du Commerce des Cotons au Havre*: Pierre Du Pasquier.

The story of the conference and of the later stages in the development of universal standards for American cotton is presented as written in the first person by H. C. Taylor in 1925:

The first session of the conference was called to order by Secretary Wallace at ten o'clock on the morning of June 11, 1923. After a few remarks on the purpose of the meeting, Secretary Wallace asked the European delegation to present the matters they wished to have considered, as they had asked for the conference. The Secretary of the Liverpool Cotton Association, acting as secretary to the European delegation, read a paper of considerable length. My memory of the paper is that it recited all the woes which were bound to befall the American cotton producer and the American cotton trader if the Fulmer law were enforced. After the reading of the document and the asking of a few questions regarding the meaning of certain statements, Secretary Wallace asked to withdraw to look after other matters and asked the Chief of the Bureau of Agricultural Economics [H. C. Taylor] to take charge of the meeting. After a few more questions, the European delegates were asked to accompany F. W. Knight, of the Cotton Division, to see the United States standards, the method of making duplicates and the methods used to preserve the original sets from deterioration. In the meantime the American delegates and the representatives of the U. S. Department of Agriculture went into executive session to consider the proposals of the European delegation and prepare a response.

At three o'clock the general conference reconvened. The European delegates expressed satisfaction with what they had seen in the division where the cotton standards were made. The chairman of the conference called upon Chester Morrill to read the document prepared in response to the statement made in the morning by the European delegation. The American document was brief and stated that, if the European cotton exchanges would adopt the United States standards for grade and color as universal standards for American cotton, and both buy and sell on the basis of these standards, the U. S. Department of Agriculture would appoint the members of the boards of final appeal in the European associations as officers of the U. S. Department of Agriculture and arrange that their findings should be final. Recognizing his inability to bind his successors, Secretary H. C. Wallace agreed to operate on this basis and it was stated, by those in immediate charge of the administration of the Fulmer Act, that an attempt to maintain this policy would be made as long as the arbitrations of the European appeal boards proved satisfactory to the American cotton

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American delegates: L. L. Bache, J. S. Bache & Co., New York; J. C. Bearden, Sanders & Co., Houston, Texas; C. W. Butler, representing Memphis Cotton Exchange, Memphis, Tenn.; H. M. Carrere, Cotton, Augusta, Ga.; L. H. Charbonnier, Jr., Charbonnier & Ellison, Augusta, Ga.; D. R. Coker, Coker Cotton Co., Pedigreed Seed Co., Hartsville, S. C.; S. W. Harris, S. W. Harris & Co., Norfolk, Va.; W. L. Harriss, Harriss, Irby & Vose, New York; J. M. Hill, Vice-Consul of the United States of America, Manchester; Matt Hill, Gill, Nelson & Caine, Dallas, Texas, and Liverpool, England; C. B. Howard, General Sales Mgr., American Cotton Growers Exchange, Atlanta, Ga.; S. T. Hubbard, Jr., Hubbard Bros., New York; Theo. Marcus, representing Theo. Marcus & Co., Dallas, Texas, Dallas Cotton Exchange; W. C. Neal, General Sales Mgr., The Mississippi Farm Bureau Cotton Association, Jackson, Miss.; W. J. Neale, Geo. H. M. McFadden & Bros., Waco, Texas; H. M. R. Newburger, Rankin & Co., V. P., New Orleans Cotton Exchange, New Orleans, La.; E. B. Norman, E. B. Norman & Co., New Orleans, La.; M. P. Rivers, Geo. H. M. McFadden & Bros., Savannah Cotton Exchange; J. L. Robinson, J. L. Robinson Co., Memphis, Tenn.; W. J. Schmitz, Sanders & Co., Houston, Texas.; G. M. Shutt, Pres., New York Cotton Exchange; W. H. Sprunt, Pres., Alex. Sprunt & Son, Inc., Wilmington, N. C.; Meachem Stewart, Meachem Stewart Co., Memphis, Tennessee; Eustace Taylor, representing Galveston Cotton Exchange and Board of Trade; W. S. Thompson, Geo. H. M. McFadden & Bros., Philadelphia, Pa.; I. Weil, Weil Bros., Montgomery, Ala.; Carl Williams, Pres., American Cotton Growers Exchange; G. S. Willman, representing Geo. S. Willman & Co., Dallas, Texas, President of Texas Cotton Association; K. E. Womack, Sanders & Co., Houston, Texas.

U. S. Department of Agriculture representatives: H. C. Wallace, Secretary of Agriculture; A. M. Agelasto, W. P. Barbot, C. J. Brand, A. B. Cox, F. W. Knight, W. R. Meadows, G. S. Meloy, Chester Morrill, A. W. Palmer, A. C. Poulton, H. C. Slade, H. C. Taylor, and L. S. Tenny.

trade. Further, as a temporary and purely transitional measure, the Department stated that it saw no objection to defining United States standards in terms of other standards for a period not to exceed one year.

After the presentation of that proposal, the European delegation asked to go into executive session, whereupon the conference was adjourned until ten o'clock the next morning. At the meeting the next morning the European delegation reported that they had worked far into the night but were not able to agree to the proposals of the American delegation, but made no counter proposal. The aim of the chairman of the meeting was then to find the objections of the European delegates to the American proposal. After a question period, the Chair elucidated the proposal in the simplest possible terms, illustrating the way in which he thought the plan would work out, but made no statements as to what the Department proposed to do in case no agreement was reached.

At this juncture some one of the European delegation indicated that they had had no opportunity to treat with the American cotton trade separately from the U. S. Department of Agriculture. Thereupon it was proposed that the representatives of the American trade go to luncheon with the European delegation individually for personal interviews. Each European delegate was accompanied by one or two representatives of the American trade. This gave opportunity not only for the European delegates to learn how solidly the American cotton trade and the Department were united on the plan for universal standards, but also for the Americans to use their native talents in helping their friends from Europe to understand the United States proposal.

When the conference reconvened at two-thirty, the American proposal had been rewritten in simpler form and was presented anew, omitting reference to length of staple thus making the proposal relate solely to standards for grade and color. At once the French delegate arose and said that the proposal was satisfactory to him and he would recommend it to the Havre Cotton Association. This elicited cheers from the American delegation. Gradually the European delegation began, one man after another, to warm up to the proposal. In the course of time the Manchester delegation expressed their satisfaction with the proposal, and, after going out for a brief executive session, the Liverpool delegation glumly announced that they would send the proposal to their Association. Upon inquiry, they made it clear that they had not implied that they would recommend but would simply submit the proposal. Thereupon George Willman, a cotton exporter from Texas, took the floor and said some things which I can never hope to do justice to. They were very forcibly to the effect that if that was all the Liverpool delegates had to say, it was time for the meeting to adjourn with the understanding that nothing had been accomplished. He took the position that the Department was being over generous in the matter. His speech wrought a surprising change of heart in the Liverpool delegation which was made up of keen men who had imagination enough to draw conclusions none of us would have put in words. After a little whispering among the Liverpool delegates, the four gentlemen from Liverpool withdrew for an executive session which lasted but a few minutes, after which they returned with shining countenances and announced that they had agreed unanimously to recommend the proposal to their Associations and urge its adoption. This announcement met with great applause and the meeting was adjourned.

The dinner at the Cosmos Club, given to the delegates that evening by Secretary Wallace, was a happy occasion. Even those who had come to tell the U. S. Department of Agriculture the dire things that would happen if the Fulmer Act were enforced were glad to know that it was to be enforced in a rational manner and that they were to cooperate in its enforcement.

Great confidence was expressed in the Department and good feeling was the natural reaction of the American delegates after the satisfactory ending of two days of rather strained relations with the European merchants with whom they were carrying on foreign trade.

After thinking over the results of the conference, it was recognized, however, that only the first hurdle had been made, that a recommendation of a small delegation was far from action by the Liverpool Cotton Association. This was realized more keenly by the Liverpool delegation than by anyone else. Representatives of the American trade who had friends in Liverpool offered to write urging the acceptance of the Department's proposal, but the Liverpool delegates doubted the wisdom of such action. Appreciating the difficulty of the task before them, the three member delegates from Liverpool sailed at once for home, leaving their secretary, A. C. Nickson, in Washington.

Upon their return to Liverpool the delegation had a long hard struggle before they finally obtained the adoption of the proposal, and then it was on the condition that the Department would call a conference for the purpose of making slight changes in the standards. I shall always remember with satisfaction the reports of the way in which the very delegate who was hardest to win in the Washington conference was a most untiring worker in convincing the home Association of the desirability of accepting universal standards. This was not an easy thing for the Liverpool merchants to agree to because it meant the abandonment of the Liverpool standards for American cotton. The Liverpool cotton merchants looked upon the making of the standards and the arbitrations for the cotton trade of Europe as their birthright to which they clung with great tenacity. On the other hand, the cotton trade of Liverpool had not returned to its pre-war prosperity and it came to be recognized that resistance to the Fulmer Act which had been proposed — refusal to buy on the United States standards — would drive trade from them and certainly eliminate their arbitrations. Hence it came to pass that the Liverpool Cotton Association voted to accept the Department's proposal "with safeguards" which were not defined but which were understood to include the idea of revision of the standards, and which, as it transpired, included other matters not thought of by the Department until they were brought up a year later.

On July 17, 1923, the Cotton Standards Conference for the revision of the standards to be used as universal standards was convened in the cotton classing room of the U. S. Department of Agriculture. Liverpool and Manchester were represented by two member delegates each and their secretaries. One of the Liverpool delegates had been in the first conference while the other was one of the home members who had been difficult to convert.[29]

The Standards Conference was opened with the Chief of the Bureau of Agricultural Economics in the chair. The purpose of the conference was briefly stated, after which the Liverpool delegation was asked to report

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[29] List of delegates to the Cotton Standards Conference as convened on July 17, 1923:
LIVERPOOL DELEGATES: A. C. Nickson, Secretary; J. C. Finley, and Cecil Taylor.
MANCHESTER DELEGATES: H. Robinson, Secretary; R. Brooks, and F. A. Tomlinson.
AMERICAN DELEGATES: C. F. Bledsoe, Greenwood, Miss.; T. F. Cahill, Hopkins, Swift & Co., New York; R. L. Crittenden, 160 State St., Boston, Mass.; R. C. Dickerson, Texas Cotton Association, Waco, Texas; W. N. Drake, Memphis Cotton Exchange, Memphis, Tenn.; C. A. Francis, New Orleans Cotton Exchange, New Orleans, La.; R. H. Gilbert, Norfolk Cotton Exchange, Norfolk, Va.; D. C. Glenn, Houston Cotton Exchange, Houston, Texas; John Gorham, Farmer, Waco, Texas; R. F. Irby, Harriss, Irby & Vose, Galveston, Texas; C. W. Johnston, Highland Park Mfg. Co., Charlotte, N. C.; Theo. Marcus, Dallas Cotton Exchange, Dallas, Texas; J. W. Morgan, Athens, Ga.; W. C. Neal, Cooperative Marketing Association, Jackson, Miss.; E. B. Norman, New Orleans Cotton Exchange, New Orleans, La.; M. P. Rivers, Savannah Cotton Exchange, Savannah, Ga.; W. H. Smith, Farmer, Prattville, Ala.; W. A. Stribling, Atlanta Commercial Exchange, Atlanta, Ga.; Eustace Taylor, Galveston Cotton Exchange, Galveston, Texas; W. S. Thomson, 121 Chestnut Street, Philadelphia, Pa.; L. W. Weil, Montgomery, Ala.; S. Y. West, Little Rock, Ark.; G. S. Willman, Dallas Cotton Exchange, Dallas, Texas.

the action of their Association. The Liverpool delegates asked their new delegate, J. C. Finley, to report. He stated that the understanding in Liverpool was that the Fulmer Act was not to be enforced the first year and that in the meantime the new standards were to be set up to become effective at the end of the year as universal standards. The tone of the report, as well as the content, was such as to set the American representatives on edge because they felt that the spirit of the Department's proposal had not been accepted by Liverpool. This put the American delegation into an unhappy frame of mind and the rumor spread that the Liverpool plan was to have the Standards Conference adopt the Liverpool standards as universal standards. This the American trade would not agree to because they thought the Liverpool standards were too white and too "flat."

A recess was taken in order that the American delegation might see the boxes which the Liverpool delegation was proposing to substitute for the middling grade, for the grade below, and for the next two grades above. While the Americans were looking at the cotton, I had a talk with the British delegation and found that the point of view presented by Finley was not confirmed by the other members. The other members were willing to take the floor and state the position as they understood it which was in harmony with the United States understanding, namely, that universal standards should become effective in August, 1923. This did much to bring peace and harmony into the conference as a whole but it left a split in the Liverpool delegation. The two men representing the membership of the Liverpool Cotton Association on that occasion were both men of the highest type and each believed he was right. The bringing of peace into the Liverpool delegation devolved in some measure upon me. An unusual thing about that Cotton Standards Conference was that I sat in the executive sessions of both sides. In the afternoon of the first day, while the American delegation was in the cotton classing room preparing their alternative proposals for revisions, the Liverpool delegation sat with me about the conference table in my office. There was danger that two cables would be sent to Liverpool, each representing the views of a faction. While we sat about the table trying to think of a happy solution, a carrier pigeon alighted on the window stoop, hopped over on the window sill, looked at us, hopped down on the floor and stood near my chair. I picked the bird up and placed it on the table. The pigeon went about on the table, stopped in front of J. C. Finley, turned its head to one side and looked that gentleman squarely in the eye. All was silence about the table for a time and then one of the Liverpool representatives said, "The dove of peace has come. We shall now find a peaceful way out of the difficulty." To make a long story short, one cable instead of two was sent to Liverpool. The answer was satisfactory. The Standards Conference continued, but not with easy sailing.

When the conference reconvened the next morning and the European delegation examined the proposals of the American representatives, it became clear that the Americans were ready to concede very little in the way of change. The Americans had the feeling that the Europeans wanted to make too radical a change in the direction of removing the color from the samples and making them more nearly flat white boxes. It was explained to the European delegation that, as a result of boll weevil conditions, new varieties of cotton had been introduced which carry more of the creamy effect in the color of the cotton and that the purpose of standards was to represent the product that was to be sold. This latter point of view is a producer's point of view. The buyer's point of view is different. He holds in mind the ideal product which he would like to possess and would like standards made on the basis of that ideal with the expectation of penalizing every bale that fails to come up to the ideal standard. The conflict of these two views made

immediate progress impossible. The general conference was recessed and the Europeans and the Americans went into separate executive sessions.

As a result of sitting in on both executive sessions, it became clear to me that the British would not accept a standard with so much color in it and that the Americans would not let all the color go. I learned also that, whereas anything in the box can be delivered in fulfillment of the contract in the futures markets of the United States, the Europeans were disposed to call for a delivery that was representative of the average of the box. This provided a way out of the difficulty. The Europeans were asking that samples of certain bales be removed from the boxes and replaced with white cotton. Each bale was represented by two samples. By removing one sample of each of the bales under consideration the average color would be reduced but at the same time it would in no way affect the deliveries on contracts in America, because the bales would still be represented in the standards.

Having learned that the Europeans would agree to the removal of one sample of each of the bales in question, if the American trade would agree to European deliveries based on the average of the box, most of the remainder of the day was spent with the American delegation, which finally and reluctantly agreed to the compromise in the interest of international harmony in the cotton trade. I felt the more inclined to urge the acceptance of this compromise because the Bureau of Agricultural Economics experts had informed me that, in a recent revision of the United States standards, the American delegates had somewhat overdone the injection of the colored bales and that a reduction in the amount of color would not damage the standards. Thus the balancing of the two points of view in standard making resulted in an improvement of the standards for use in the export trade and brought harmony after two days of hard struggle. The British delegates all agreed to recommend the adoption of the proposed revisions. The Liverpool delegation received a cable the next morning approving the results of the standards conference.

When it was all over, everyone recognized that the total change proposed was not so far-reaching as the Americans had at first thought and that a satisfactory solution had been reached. There was much significance, however, in a chance remark of Cecil Taylor, of the Liverpool delegation, that afternoon after the conference was over as he sat drumming his fingers on the conference table. "Universal standards will cost me a pretty penny, but they are for the good of the cotton trade of the world and therefore for the best." "Why," said I, "will universal standards cost you anything? You still have the arbitrations." "Yes, we still have the arbitrations, but the American exporters can ship to these standards and there won't be so many arbitrations."

From the 19th of July, 1923, until the 19th of May, 1924, all went well. L. H. Tenny and A. W. Palmer went to Europe and obtained the signatures of all the cotton exchanges to the agreement providing for universal standards.[30]

In the spring of 1924 it was decided that I should go as one of the delegates from the United States to the biennial General Assembly of the International Institute of Agriculture which met early in May of that year. Incidentally, at the request of a number of the European cotton associations I arranged to pay a visit to those exchanges which were in the line of my travel. On Thursday, the 15th of May, 1924, I visited Havre and met the Board of Cotton Classers who had been appointed officials of the U. S.

[30] The associations which signed the Agreement of 1923 were: United Kingdom: Liverpool Cotton Association, Ltd.; Manchester Cotton Association, Ltd.; Federation of Master Cotton Spinners and Manufacturers Association. France: Syndicat du Commerce des Cotons au Havre. Germany: Bremer Baumwolle Borse. Italy: Associazione Cotoniera Italiana. Spain: Centro Algodonera de Barcelona. Netherlands: Vereeniging voor den Katoenhandel, Rotterdam. Belgium: Marché de Coton à Gand.

Department of Agriculture for making final arbitrations. A meeting with the Liverpool Cotton Association had been arranged for May 19. Word had gone out that the members of the Liverpool Cotton Association were unhappy about the universal standards. I arrived with two cotton experts in Liverpool on May 17. The experts looked into the cause of the difficulty. A new set of copies of the universal standards had been received from Washington by the Liverpool Cotton Association. A committee of that Association had been appointed to go over the copies with great care and compare them with the set that had been brought over the year before by those who attended the standards conference. The Liverpool experts decided that one of the nine white boxes, the middling box, was slightly too low in grade.

Representatives of the other European exchanges had been invited to attend a meeting in Liverpool on that occasion and were told that a very serious matter was up for consideration. The Continental delegates were taken to the arbitration rooms of the Liverpool Association and shown the copies of the standards and discrepancies which they had found. Having brought another set of copies of the standards along with us, I asked that it be opened, aired, and compared with the copies we had recently sent to Liverpool. The result confirmed the report of the Liverpool delegates to the effect that their middling box was slightly low and should be replaced. It had long been the custom in the United States to recognize that mistakes might be made and provision was made for exchanging such boxes without charge. No different arrangement had been provided for under universal standards but the agreement stated specifically that the U. S. Department of Agriculture should be the custodian of the original standards and the sole maker of copies of the standards.

As the meeting on the 19th of May, 1924, proceeded, it became clear that the particular middling box of standards was not the real issue. The real issue was the control of the standards. It was proposed that all boxes sent to Europe be sent to Liverpool for checking with the set brought over the year before. To make the matter less laborious, it was proposed that enough sets be sent to Liverpool to provide each of the European exchanges with "key sets." The "European Committee" would then pass upon the copies and when sufficient sets had been approved they would be forwarded to the various exchanges. After that the individual exchanges would have a basis of checking the copies of the standards sent to them.

The suggestion that some system should be devised for guaranteeing the uniformity of the standards in use for arbitration purposes in Europe appealed to us at once. But we could not agree that such a system should be constructed and carried out as a checking committee superior in authority to the U. S. Department of Agriculture. Before the evening meeting was over, two of the Liverpool men who had been present in one or the other of the Washington conferences said it was their understanding that the boxes they brought over the year before were just as much the original standards as were the ones in Washington and that the set brought over was for the European committee to use in passing upon the copies of the standards sent to Europe. That statement was denied by the other three Liverpool delegates to the Washington conferences.

Proposals were drawn up by the meeting, at which the members of the Department were only guests, calling for a supplemental agreement to provide for a European checking system for the copies of the standards sent to Europe. Enough had been said and done on that occasion to throw the representatives of the European associations into confusion and to cast doubt upon our ability to make copies of the standards which would be above reproach. Friends of universal standards in the Liverpool Cotton

Association were kind to us and said the middling box was very slightly off but the difference between the two boxes was far less than the differences between the outstanding Liverpool boxes. That did not help us very much. A state of doubt had been created and we had the task of reestablishing confidence in the work of the Department as a maker of copies of the standards.

I was conscious of the fact that our friends in Liverpool had oversold the Department the year before when they were inducing the Liverpool Association to accept the United States proposal. It was no surprise, therefore, to find a reaction and an over-advertising of the weaknesses of the U. S. Department of Agriculture once the "wreckers" of universal standards were in the saddle, as they clearly were in the summer of 1924. The President of the Association for that year said to me that in the spring of 1923 he had stated there could be no such thing as universal standards, but he went away on his vacation and when he came back they had universal standards. He spoke feelingly of their traditions, their birthright and of the deep feelings involved in making such changes as were involved in dropping their standards and accepting universal standards controlled by the United States Government.

I knew that we had to deal with an emotional situation and that an attempt would be made to drive a very hard bargain with us if they should negotiate a supplemental agreement at that time. Furthermore, their proposals included only a part of the matters involved in the administration of universal standards. It was clear that time and the establishment of confidence was the only hope for a satisfactory outcome. I told those present at the Liverpool meeting that no one else was more concerned in the accuracy of the standards than the Department of Agriculture, and that as long as the arbitrations were in Europe the Department wanted the standards which were used in each of the European exchanges to be the equivalent of every other set of copies in use for the same purpose. In order to provide for a guarantee that the copies in all the European exchanges should be equivalent, I proposed that the U. S. Department of Agriculture prepare twenty sets and that a June, 1924, conference be held in Washington for the purpose of checking the sets and making sure they were equivalents. I asked any of the European associations that so desired to send representatives to the conference and announced that the American trade would be invited. That forestalled for the time being settlement of the question of sending a number of sets to Europe to be passed upon. Such a measure could not have been agreed to. The final decision must, under the law, always rest with the U. S. Department of Agriculture.

That Washington conference was arranged and would have gone off well had it not been for the insistence by Liverpool that the purpose of the Washington conference was to negotiate a supplemental agreement along lines laid down in the Liverpool conference, as well as to pass upon the copies of the standards. While I was agreeable to a conference to negotiate a supplemental agreement to take care of any administrative matters which were not provided for in the original agreement, I knew that the technical cotton experts who attended the Washington conference were not the ones to negotiate such an agreement. Furthermore, I knew how impossible it would be to agree with Liverpool until they had gotten away from the idea of European control which meant Liverpool control of the standards. I sent a cable to Liverpool from the Continent which made clear that, while the Department was ready to recommend a conference to negotiate a supplementary agreement after the Washington meeting, I could not urge the adoption of the document they had submitted to the Washington meeting. The answer was the notice of withdrawal of Liverpool, effective August 1,

1925. They next tried to induce all the European associations to give notice of withdrawal, which none of them did.

While that conflict was going on, Secretary H. C. Wallace was kept fully informed and he sat back calmly and said, "We have the Fulmer Act just the same and, of course, will administer it with or without the cooperation of the European exchanges." That was a wise and cool-headed position, but I had no intention of throwing down the project for universal standards for American cotton. With Secretary Wallace's consent, a conference of delegates, European and American, was called to meet in London on the 22nd day of July, 1924. Tenny and Morrill went from Washington to help with the conference. We drew up a supplemental agreement to take care of the preparation and preservation of the standards and to provide for the participation of the European exchanges in passing upon the arbitration sets each year in Washington. In order to make it possible for all the exchanges to be represented, the Department agreed to pay rail and water transportation of delegates to and from Washington.

The London conference of July 22, 1924, was a tug of war between the U. S. Department of Agriculture and the Liverpool Cotton Association. Prior to the conference, while Tenny and Morrill and I were drafting a document for the meeting, representatives of the Liverpool Association literally made a flying trip to the Continent, visited the leading exchanges and laid their grievances before the memberships of those exchanges. Liverpool then gave a dinner in London to the delegates the Sunday night before the opening of the conference and got them all to promise to stand together in the conference. Our one hope was to hold the Manchester and the Continental associations with us and get them to sign a supplemental agreement that would give direction to the work and maintain confidence in the administration of the standards by the Department. The first session of the London conference held Monday afternoon, and a dinner at the American Club for all the delegates which cost the United States Government nothing but which cost us boys two hundred and twenty-five dollars, broke the combination which Liverpool had established and on the next day a satisfactory agreement was drawn up which was approved and signed by all the Continental exchanges and by Manchester.

That done, Morrill, Tenny, and I returned home and arranged adequate safeguards to be placed about the preparation and conservation of the master sets of the standards, so that the chance of mistakes or the chance of doubts arising regarding the standards would be reduced to a minimum. Under the plan then devised the master sets were kept in the Treasury of the United States and never taken out except by a committee appointed by a meeting of the delegates of the associations when they come to Washington to pass upon new copies for the arbitration boards in Europe and America. Soon after our return from Europe, representatives of the American cotton export trade were called in and told the whole story of the conflict with Liverpool. They pledged their support of the U. S. Department of Agriculture.

In due course of time there was a rumor that the Fulmer Act was to be attacked in Congress and repealed. The question of the legality of the agreement under which the Department was cooperating with the European exchanges elicited so much interest on the part of the European exchanges that it could not be ignored. The representatives of the U. S. Department of Agriculture went directly to Congress and obtained the approval of that body of the activities the Department was carrying on cooperatively with the European exchanges. That added nothing to the law but gave a Congressional interpretation of the law.

As the time drew near for the March, 1925, conference in Washington

for passing upon new master sets of the standards (the first meeting under the supplemental agreement) the Liverpool Cotton Association began to consider whether it should definitely stay on the outside or cancel its notice to withdraw and cooperate in accordance with the original and supplemental agreements. When that Association called upon the American trade for sympathy it got none. It was told frankly that the American trade did not "care a damn" whether it came in or stayed out and that, so far as they could ascertain, the Department of Agriculture cared even less. That was not the whole truth but proved to be good medicine to have administered by the trade.

After some delay the Liverpool Cotton Association voted to ask the board of directors to reopen negotiations with the U. S. Department of Agriculture. The Bureau of Agricultural Economics was informed through the United States Agricultural Commissioner in London that Liverpool would like an invitation from the Secretary of Agriculture to attend the Washington conference, March, 1925. They were told informally through the London office that they would be courteously received if they came to Washington but that the March conference was a meeting of delegates from those exchanges which had signed the supplemental agreement, and whether or not others could participate even as onlookers depended upon the action of the delegates. The Liverpool association sent representatives to Washington. They were accepted by the conference as non-voting members.

At the Washington conference the question of passing upon the copies of the standards was handled rapidly. The meeting was a harmonious one. All of the work was accomplished in less than four days. In the meantime, informal conferences were held with the Liverpool delegation to ascertain their state of mind. The new president of that Association was a fine type of business man. The emotions of the year before were not in evidence. It was clear that the friends of universal standards were again in the ascendency in Liverpool but probably not very firmly seated.

The representatives of the Liverpool association asked for some changes in the supplemental agreement. Their first suggestion related to the frequency of meetings in Washington. They desired to have the meetings once in two years instead of every year. That pleased the United States group. The yearly schedule had been arranged for the purpose of establishing the confidence which had been shaken the year before. The other proposal was that the voting in the Washington conference for passing on the arbitration sets should be based on the amount of business done by each exchange rather than on the principle of one vote for each exchange. The U. S. Department of Agriculture could not consider the latter question as it meant taking away from the small exchanges some of the power which had been granted them in the supplemental agreement the year before. We said that if the other exchanges unanimously agreed to the change in voting power, the Department of Agriculture would make no objection. Other proposals were brought up by the Liverpool delegates which involved making a distinction between the legal status of the copies approved by the Washington conferences and those issued by the Department without such assistance from the outside delegation. That could not be considered, first of all, because it would not be legal. But had it been legal, the Department would not have agreed to a plan which would put into the hands of the arbitration boards all the authoritative sets of the standards. The purpose of universal standards was to give the producer and spinner as good standards as the exchanges.

The conference with the Liverpool delegates was a pleasant one. The delegation went home proposing to cancel the notice to withdraw as soon as the desired changes in the supplemental agreement were assured. The

Department agreed to call a conference in London to take up the question of amendments to the supplemental agreement as soon as Liverpool sent word that the voting question could be arranged satisfactorily. Upon returning to Liverpool, two things happened to frustrate the plans. First, the small exchanges were not willing to change the voting power in the supplemental agreement. Second, the long delayed opinion of a high priced American lawyer was finally sent in. Though it had evidently been prepared before the Congressional approval had been obtained, that opinion threw some doubt upon the legality of the agreement. That made it desirable to rewrite certain paragraphs, although such changes in no way affected the purport of the agreement.

That situation gave the anti-universal standards group in Liverpool a chance again to throw in their objections and a chance to unsettle the minds of all the European associations. The counsels of the U. S. Department of Agriculture, headed by W. G. Campbell, Director of Regulatory Work, favored a conference to be held in London for the purpose of making changes in the agreement which were needed because of some unnecessary and awkward phrases, and, if possible, for arranging to meet once in two years instead of every year.

The London conference was called for the 18th of May, 1925, and I went to Europe to make the necessary preparations. To clear up the bad effects of the opinion of the American lawyer prior to the conference, it was decided to obtain the opinion of the Attorney General of the United States. That was done with unusual dispatch but not until after I had reached Europe. I went to Liverpool soon after reaching England and found the President of the Association ready to forget the question of voting power and every other point relating to the supplemental agreement, if only he could obtain the means of assuring his Association that the Secretary of Agriculture had the authority to do the things the contract called for and that the arbitrations made by their final appeal boards, acting for the U. S. Department of Agriculture, would certainly be final.

A promise from the new Secretary of Agriculture, W. M. Jardine, to carry out the spirit of the understanding was all that could be expected from that source, but just at the right moment the opinion of the Attorney. General came which cleared away all doubt as to the Secretary's authority. There being no doubt as to the willingness of the Secretary of Agriculture to proceed with the agreement, though he had the right to give notice to quit, the last obstacle had been removed and before the London conference convened Liverpool had canceled her notice to withdraw, signed the supplemental agreement as it stood, and entered the London conference on the same basis as the other associations.

The work of the London conference was soon over. The Washington meetings for reviewing the copies of the standards were changed to a biennial basis, the illegal verbiage, which came in the first place from excessive caution on the part of the Liverpool Association, was removed, and the meeting adjourned after a two-hour session where there were no dissenting votes. The questions of rules of voting were not brought up.

In this account the Liverpool Cotton Association has received the major attention because it was the one which had much to give up, while the other exchanges had much to gain and little or nothing to give up. Viewed in a large way and from a long-time point of view, Liverpool acted generously.[31]

[31] H. C. Taylor, *A Farm Economist in Washington, 1919–25,* (unpublished manuscript, 1925), pp. 172–98.

Development of Wool Standards

The development of wool standards made important progress during the four years, 1921–25. Lloyd S. Tenny, Assistant Chief of the Bureau of Agricultural Economics, was the leader in that undertaking. Prior to Tenny's connection with the Bureau, some work had been done in the classification of wool and the preparation of samples showing the character of the wool of different grades. While length and diameter of fiber formed the real basis of classification, the names of the grades were based upon the "breeding" of the sheep from which the wool was clipped. That was a fairly satisfactory method of standardizing wool from the standpoint of the farmer.

When the standards were in tentative form, Tenny and G. T. Willingmyre, in immediate charge of the wool standardization work, held a number of conferences in the spring of 1923 with the wool producers and the wool trade, with the hope of getting suggestions that would be helpful in improving the standards and that the trade would in time accept those standards as a basis of trade contracts and of market news. As a result of those conferences it became clear that the American wool trade was interested in the United States standards, but it was buying much of its wool from abroad on the English "count" system, which has as its basis the number of threads which can be spun from a given weight of wool. The "count" corresponded to lengths and diameters of fibers just as the United States system did, but as long as the names were different and the equivalents unknown, the "count" system and the "breed" system of designating wool were separate languages. That situation led Tenny to contemplate studying the English wool standards with a view to harmonizing the two systems.

With that in mind, Tenny took Willingmyre with him to Europe in August, 1923, when he went to obtain signatures to the universal cotton standards agreement. They went to Bradford, the greatest center of the wool trade in the world, and sought an interview with the organized wool trade. The interview developed the fact that the English wool standards were not represented by physical samples but were mental concepts. That does not mean that the matter of standards was as slipshod a matter as the statement might at first seem to imply. The world's best wool experts were in Bradford. These men knew wool. They could make much finer discriminations between differences in quality than can be depicted by any practical representations of the standards. But for the purposes of the U. S. Department of Agriculture, the mental concepts of the Bradford wool merchants were of use only as they could be translated into samples of wool. After some hesitation, the Bradford wool merchants agreed to appoint a committee to select and send to the U. S. Department of Agriculture a set of samples of wool to represent the different "counts."

That was an act of great generosity on the part of the Bradford merchants.

The state of mind of the Bradford wool trade was made clear to H. C. Taylor in the summer of 1924 when he visited that city to thank the merchants for their courtesy in supplying the wool samples and to see what could be done in laying the foundation for an international agreement upon wool standards, so that the American trade could buy at home and abroad on the same standards. It was recognized also that with international standards price quotations abroad could be translated into an intelligible equivalent for the United States. Furthermore, the tariff on wool would have a better basis when standards for the product became the basis of purchase abroad.

While international wool standards were kept in mind as an ideal, the immediate objective of the Bureau was an adequate set of standards for use in the United States. As the United States is not an exporter of wool, the Bureau's objective was to learn as much as possible abroad to help perfect the United States standards and leave to Bradford the initiative on the question of international standards.

When B. W. Kilgore, E. A. Foley, the United States Agricultural Commissioner at London, and H. C. Taylor arrived in Bradford in May, 1924, about nine months after Lloyd Tenny and G. T. Willingmyre had been there, they learned that the wool trade had planned a luncheon for them. At the luncheon, the toastmaster made it clear that the wool trade of Bradford looked with some concern on giving out information, the exclusive possession of which was their peculiar asset. He stressed the point that, as long as the wool producer and the wool consumer have no common language, the intermediary, who knows the demands of the various woolen mills and knows where to buy the wool, has an important function which might disappear in case wool should become standardized and producers and consumers were both familiar with the standards.

When it came Taylor's time to speak, he found himself in an uncomfortable position. He was not entirely sure of the extent to which the toastmaster was serious and the extent to which he was speaking in the lighter vein with the idea in the back of his mind that, whatever might be done in the way of creating physical representations of the Bradford concepts of wool grades, there would still be so many finer distinctions that the wool merchants of Bradford had nothing to fear. Taylor, therefore, told approximately 60 members of the Bradford wool trade assembled about the tables that he could best indicate to them the reason for studying the English wool standards in Bradford by telling them of an incident that occurred in Washington a short time before. According to the story, a policeman noticed a man down on his hands and knees on the

pavement under a street light. The policeman inquired for what the man was looking. The man replied, "A watch charm." "Where did you lose it?" asked the policeman. "About ten yards down the street," replied the man. The policeman, astonished, inquired, "Why, then, are you searching here?" The reply came quickly: "This is the only place there is any light." The Bradford merchants appreciated the compliment.

The samples of wool sent to the U. S. Department of Agriculture by the Bradford wool merchants in 1923, had been carefully studied in Washington and arranged in orderly form in a manner to show the relationship of the two sets of standards. This done, diameter measurements were made to determine whether the samples picked on the basis of mental concepts would conform to mathematical measurements. The results were remarkably good, but gave basis for some readjustments. In due time adjusted samples were ready for inspection. The wool interests in England and America were pleased. New wool standards were promulgated effective July 1, 1926,[32] thus bringing to a successful conclusion the work on that subject which had for its purpose the making of the United States standards comparable with the Bradford Chamber of Commerce standards.

Market News Service

By April 22, 1920, the market news service of the Bureau of Markets covered:

> . . . livestock and meats, poultry and dairy products, fruits, vegetables and peanuts, cotton, hay, feeds and seeds. Nearly 1200 different railroad agents on 474 railroads, involving 248,000 miles of road, send reports on carlot movements to the Bureau, which are used in connection with the daily telegraphic bulletins. Also 9,350 local station agents report monthly the carlot forwardings of certain commodities. This enables us to have more complete statistics of the origin and commercial movement of these commodities in the United States than have ever been gotten by any other agency.[33]

The market news service made great progress from 1921 to 1925. The quality of the service improved as men were trained in the work of gathering information and as better techniques of disseminating the facts were developed.

The livestock market news not only gave the prices of all kinds of livestock and meats in the larger markets but the service's experts gathered information on the receipts and prospective receipts in these markets. Information on the number of livestock shipped from the outer zones contributory to the large slaughtering centers gave those on the inner zones advance notice as to whether the receipts were likely to be heavy or light on a given day. This made it possible

[32] U.S.D.A., Bureau of Agricultural Economics, *Report of the Chief*, 1926 (Washington, 1926), p. 17.

[33] From a typewritten memorandum, dated April 22, 1920, from George Livingston, Chief of the Bureau of Markets, U.S.D.A., to the Secretary of Agriculture.

for inner zone men to hold back their stock when the receipts from the outer zones were to be heavy and send their stock in on days when the receipts from the outer zones were to be light. That steadied the flow to market to the advantage of all shippers and slaughterers.

The dairy and poultry market news service gave the prices of cheese, butter, eggs, and poultry from day to day in the leading markets, provided information on the movement of stocks of dairy and poultry products into the leading centers of consumption and on the movement of stocks in and out of storage. As evidence of the happy way in which work of this kind may be fitted into the life of the industry, the New York Mercantile Exchange ceased gathering statistics of receipts of dairy and poultry products for that city and depended entirely upon Department figures.

The other great market news service is that for fruits and vegetables. The orderly movement of perishable products into the centers of consumption is so important that this branch of the market news service was the first to be developed in 1915. In this service the price figures are gathered and disseminated from day to day, but the facts about the movements from the distant producing areas are counted of even greater importance. These figures give a basis of predicting the probable condition of the market on certain dates in the future when the shipper is thinking of placing products upon the market. The figures on movements and receipts are the basis for making primary consignments and reconsignments. The ideal is to have all the markets supplied with just the right proportion of the total daily available supply. The accumulation of information gives a basis for estimating the absorbing power of each of the consuming centers large and small. With these facts, and the daily information on movements, the shipper can make a better guess than otherwise as to where to send his goods. Yet with full information perfect adjustment can not be expected unless in some way unity of action can be brought about among shippers.

An excellent example of unity of action was illustrated by the distribution of the cantaloupe crop of the Imperial Valley of California. Early in the season this is the only supply of cantaloupes for the whole country. If Imperial Valley cantaloupe growers operated independently, some cities would be glutted and many of the smaller centers would get no melons. In order to improve the situation, the Bureau representative, who was located in the Valley for the purpose of reporting shipments to the central office in Washington and of reporting to the shippers conditions in the eastern markets, suggested that each shipper hand in information at noon each day as to his shipments or his intentions to ship for that day. After the material thus collected had been tabulated the shippers were asked to call at the office at a definite time and look over the report. As the tabulation was studied, it usually became evident that certain cities were

likely to receive too many cars of melons while others would not receive enough. While assembled together the men volunteered to change shipments from one town to another until the distribution corresponded to the absorbing power of the various cities. Then the shippers would adjourn, having jointly performed a service to the consumers, as well as the producers, in perfecting the distribution of the product while in no way limiting the supply. It is only with information and co-ordinated action of this kind that a shipper dare send a car of melons to the smaller towns, for should two cars arrive at once in one of these towns the market would be glutted. After the other melon growing areas begin shipping the problem is more complex, but full information from other points helps the large centers to locate their shipments in a way to equalize fairly well the supply on the various markets.

The market news service on grain and cotton and other non-perishable staples was developed to so high a degree of perfection through the exchanges that the government had not found itself in a position to make a similarly important contribution in these fields. However, something worth while was done in those fields in disseminating information. The leased wire system was the instrumentality which facilitated the daily market news service. In 1921 the system consisted of a 12-hour single wire service from Washington to Boston through Philadelphia and New York; from Washington to Chicago with branches to Minneapolis, Kansas City, and Omaha. That system was inadequate and the outside demand for service so impressed Congress with its importance that appropriations were made for various extensions of the system; to San Francisco on the west; to Austin, Texas, on the south from Kansas City, and the installation of a service between Washington and the fruit and truck growing regions of the southeastern states.

Extension of the leased wire service, which was essential to the collection of information, was stimulated by the development of the radio as a means of disseminating information. These new facilities for transmitting news to farmers made it doubly important that the best information available be obtained. Prior to the radio, mimeographed sheets were distributed from each office along the line of the leased wire and local papers picked up the information and printed it. That method was limited in scope compared with radio. The expansion of the leased wire system and the use of radio in the distribution of market news did not come in a day, nor without a struggle. Taylor received a letter in December, 1922, from C. W. Pugsley, Assistant Secretary of Agriculture, stating that he had been told that radio as a means of disseminating market news was "bunk" and that the Bureau of Agricultural Economics was wasting money experimenting in that field. A radio was installed in the Assistant Secretary's house by the Bureau of Agricultural Economics. The

results were so satisfactory that in a few weeks the Assistant Secretary was eager for the Bureau of Agricultural Economics to continue the experiment.

Fruit and Vegetable Inspection

The inspection service in fruits and vegetables which, like the market news service, is based on the standardization work of the Bureau of Agricultural Economics, made phenomenal growth during the period from 1921 to 1925. Prior to that time the inspection service in terminal markets had done much to protect shippers from unfair treatment in the central markets. The fact that shippers could obtain federal certificates (which were prima facie evidence in the courts of the United States) showing the condition of the product when it reached the market made it unsafe for the commission man to report the car to be in bad order when it was not. If the product arrived in bad conditions, the receiver also could protect himself by asking for federal inspection so as to have the certificate as a basis of making adjustment with the shipper or the railway company.

In determining whether the farmer or the railroad was responsible for a bad condition of the product when it arrived in the city, knowledge of its condition when shipped was also important. Shipping point inspection would provide the information.

The appropriation bill for the Bureau of Agricultural Economics for 1923 was the first to carry language permitting the use of the appropriations for shipping point inspections. That bill did not carry any increase in the amount of money available for the inspection work. It was decided, however, to make a start by co-operating with such states as were in a position to collect fees for the inspections and pay out money for the work of making the inspections. The Bureau could not start the work on a revolving fund basis, but the states could establish revolving funds into which most of the fees were paid. The Bureau found a small amount of money for the general administration of the service, while the co-operating state paid all the rest of the cost out of state appropriations or a revolving fund. This procedure was explained to Congress, and appropriations were made for the general administration of this work for later years.

Shipping point inspection did all that was to be expected and more in the way of checking up on the railroads. One of the early developments was the repairing of all refrigerator cars as rapidly as possible when the railroad companies learned that the shipping point inspection certificate carried a statement as to the condition of the car. Obviously, if the car was out of condition and the fruit perished in transit the transportation company had to pay for the fruit. The result was a request that whenever a car was found to be out of order that fact should be reported to the railroad company at once.

Another invaluable service of shipping point inspection was its

influence in encouraging standardization of the product at the shipping point and elimination of large quantities of products that would otherwise be discarded after they reached the market. This saved packing and freight charges on unsalable products. The North Carolina Peach Growers contributed eloquent testimony as to the value of the service in inducing their members to grade their product. The celery growers of Florida began to leave in the field much valueless material they formerly shipped to the city markets where it had to be drayed away.

Shipping point inspections also made possible wire or f.o.b. auctions, in which cars of perishables are sold on the basis of their certificate as soon as they have been shipped and often many days before they arrive in the market. The buyer rebills the car to the point where he wants it and the transaction is complete. When worked on a large scale these f.o.b. auctions, conducted simultaneously in several cities, do much to promote the proper distribution of the product and put the producer in possession of his money almost as soon as his car is shipped. Carried to its logical conclusion, it may do much in the way of limiting the number of cars shipped and thus reducing losses due to shipments that would not pay freight, to say nothing of the cost of packing, picking, and growing the product.

Effective standardiation at the shipping point is the most powerful influence in inducing growers to produce the quality of product that is salable. The farmer who brings his fruit and vegetables to the shipping point, sees them graded, hauls home the culls and unloads them for feeding purposes or to rot, has learned a lesson. Whether the difficulty is in the seed, in the soil, in cultivation, or in harvesting, effort is likely to result in removing the cause of an excessive number of culls.

The standardization of containers for fruits and vegetables is an example of how easily a purpose can be accomplished if all concerned co-operate. Under a compulsory law, the Department established certain sizes for baskets, hampers, and boxes for fruits and vegetables. Then instead of watching all the shipments and all the markets, arrangements were made whereby the manufacturers undertook to produce standard sizes only.

For the standardization work in fruits and vegetables and the development of the inspection services, Wells A. Sherman deserves greatest credit. He and his able assistants, H. W. Samson and F. G. Robb, made a three-man team that has not been equalled. Taylor's first impression of Sherman was that he had a wonderful motor but inadequate brakes. He decided to give Sherman scope and keep an eye out for the necessity of putting on the barkes. Sherman took to that plan well. With greater freedom he developed greater care. He had in his organization other men who helped maintain a safe speed. Accomplishments in that field were far-reaching.

The standardization of fruits and vegetables[34] was voluntary but nevertheless great progress was made, especially as a result of shipping-point inspection which expanded rapidly in co-operation with the state agencies. The report for 1928 shows that shipping-point inspection had been developed in co-operation with 41 states and covered 60 commodities. In that year 210,832 cars were inspected at the shipping point.[35] In 1931 the number of cars inspected at the shipping point was 311,833.[36] The report for 1930 states:

> The perishable agricultural commodities act, also enacted by the last Congress, provides for the licensing of commission merchants and others engaged in the buying and selling of fresh fruits and vegetables, and aims to prevent unfair and fraudulent practices in the handling of these products.[37]

Shipping-point inspection became especially important in Florida, Texas, California, and Colorado because of the high cost of shipping products to the market, and the importance, therefore, of sending only that which is of excellent quality. The marketing of Colorado melons may be used to illustrate the value of the service.

Colorado in the early days, like California, found local markets by supplying demands of the mining interests, but with the progress of the years the production of certain specialties expanded faster than did the local market demand. To win in the distant markets, products of a rare quality, or products not produced by the farmers near those markets, had to be produced in order to obtain prices which would cover the cost of transportation and yield a profit. Colorado farmers discovered a few products which met the test. Cantaloupes, orchard fruits, and Greeley potatoes were successfully marketed at distant points. The Rockyford cantaloupe is an example of a product that won a place in the New York market because of its superior quality and by efficient marketing through co-operative associations.[38] In 1926 a bulletin by Sanborn brought the cantaloupe marketing story up to that date and included also, in parallel line, the honeydew melon.[39] The Colorado product had held its market by continual effort to improve the quality and by introducing shipping-point inspection with federal certification through federal-state co-operation. The most important factor in the inspection work is checking on the maturity of the melons. This was determined largely by external appearance, but cutting a melon occasionally as a check was practiced. In some cases the sugar test was used to determine maturity.

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[34] For an inside story of the development of the federal marketing services for fruits and vegetables, see Wells A. Sherman, *Merchandising Fruits and Vegetables* (Chicago and New York: A. W. Shaw Company, 1928).

[35] U.S.D.A., Bureau of Agricultural Economics, *Report of the Chief,* 1928 (Washington, 1928), p. 18.

[36] *Report of the Chief,* 1931, p. 25.

[37] *Report of the Chief,* 1930, p. 2.

[38] See P. K. Blinn, "Development of the Rockyford Cantaloupe Industry," Colorado Agr. Exp. Sta. *Bulletin* 108 (Fort Collins, 1906).

[39] N. D. Sanborn, "Harvesting and Marketing Cantaloupes and Honey Dew Melons in the Arkansas Valley of Colorado, Seasons of 1924 and 1925," Colorado Agr. Exp. Sta. *Bulletin* 312 (Fort Collins, 1926).

A good example of state co-operation in making federal standards effective through an inspection service is found in Indiana. Six Indiana bulletins appeared which gave special attention to the use of grades and standards in the marketing of farm products. Those bulletins discussed grading of peaches, tomatoes, eggs, and potatoes. Peaches were graded in accordance with United States standards and certificated by the federal inspectors.[40] There were three bulletins on the grading of tomatoes. The first in 1927 made a study of tomatoes arriving at 13 canneries.[41] The study showed that large quantities of culls were being delivered to the factories when tomatoes were ungraded. Purchase on the basis of United States standards was recommended. In 1928 the investigator worked with nine canneries which contracted with their growers to pay a definite price for No. 1's

> The seasonal average for tomatoes delivered was 47.19 per cent No. 1's, 47.42 per cent No. 2's and 5.39 per cent culls. In 1927, under similar conditions, on the flat rate basis the averages had been 30.4 per cent No. 1's 50.6 per cent No. 2's and 19 per cent culls.[42]

The demonstration work was continued in 1929 with even better results in reducing culls and increasing No. 1's.

> The tomato inspectors were selected and trained by the Purdue Agricultural Experiment Station and placed at the respective canning plants to grade tomatoes as delivered by the contractor to the canner. Inspectors spent a considerable part of their time at the beginning of the season helping the farmer so that each one had definite knowledge of the requirements for different grades of tomatoes classified under U. S. No. 1's, U. S. No. 2's and culls. As a result of this work, the farmers soon learned how to pick tomatoes so as to deliver the largest percentage of number ones and the lowest possible amount of culls.[43]

That three-year project is especially to be commended because, having determined the facts in 1927, successful efforts were made in 1928 and 1929 to get farmers and canners to adopt the United States standards as a basis of their contract. During the same years, and in response to interest on the part of dealers and farmers, a study was made of the buying of eggs on the basis of grade in one typical community where that method of buying had been in operation. The author stated:

> . . . The results of the study have revealed some valuable facts concerning this system of buying. The volume of eggs submitted for grading had rapidly increased from 1924 to 1928. During eight months of 1924, 35,612 dozens were received; 67,225 dozens in 1925; 87,047 dozens in 1926; 126,149 in 1927; and 254,975 dozens during 1928. . . .

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[40] F. C. Gaylord, "Indiana Peaches," Indiana Agr. Exp. Sta. *Bulletin* 309 (Lafayette, 1927).

[41] F. C. Gaylord and H. M. Cleaver, "Grading Tomatos for Quality," Indiana Agr. Exp. Sta. *Bulletin* 317 (Lafayette, 1927).

[42] F. C. Gaylord and H. M. Cleaver, "Buying Tomatoes on Grade, 1928," Indiana Agr. Exp. Sta. *Bulletin* 328 (Lafayette, 1929), p. 2.

[43] F. C. Gaylord and J. H. MacGillivray, "Buying Tomatoes on Grade, 1929," Indiana Agr. Exp. Sta. *Bulletin* 336 (Lafayette, 1930), pp. 4–5.

The grading system used in the territory which was studied not only greatly increased the volume of eggs but it also enabled the buyer to pay the farmers a higher price. With a differential varying from five cents to 21 cents between grades . . . .[44]

Potatoes also claimed attention. A report on the marketing of Indiana potatoes pointed out that only 37 per cent of the potatoes consumed in Indiana were produced in the state:

> . . . Hand grading was practiced by 71 per cent of the growers.
>
> Around 32 per cent of the potato growers were familiar with Federal grades for potatoes. . . .
>
> When buying potatoes, 89 per cent of the retail grocers buy on a basis of U. S. No. 1 grade, 93 per cent of wholesalers buy U. S. No. 1 potatoes. Grade was given as the chief objection to local potatoes by 49 per cent of the grocers. Of those grocers buying local potatoes, 56 per cent stated that the local product was not graded. Sixty-eight per cent were of the opinion that local potatoes did not meet the requirements of U. S. No. 1 grade.[45]

[44] E. R. Menefee, "The Marketing of Eggs on a Graded Basis," Indiana Agr. Exp. Sta. *Bulletin* 334 (Lafayette, 1929), p. 2.

[45] F. C. Gaylord and H. M. Cleaver, "Marketing Indiana Potatoes: Local Supply and Imports," Indiana Agr. Exp. Sta. *Bulletin* 361 (Lafayette, 1932), p. 2.

24.

Co-operative Marketing Studies

AGRICULTURAL CO-OPERATION in the United States grew up to meet the needs of farmers. The need of a butter or cheese factory, of a grain elevator at the local market, of a packing house for preparing fruits for shipment to distant markets, gave rise to co-operative effort. In some cases it was not the lack of a creamery or of a grain elevator, but the belief that farmers were charged too much for the service of private agencies which led farmers to build a creamery or a grain elevator of their own.

U. S. Department of Agriculture

Although the U. S. Department of Agriculture and the agricultural colleges were not responsible for starting the co-operative movement, they manifested a sympathetic interest in the movement. Their work in this field was largely confined to research, education, and service. The effort here will be to present examples of that work in the Department of Agriculture and in a few states.

The Department of Agriculture had manifested an interest in agricultural co-operation for many years. G. K. Holmes, of the Bureau of Statistics, had shown an interest in the subject and, by 1901, had prepared a manuscript entitled *Farmers' Cooperation*.[1] He discussed farmers' co-operatives in the United States and abroad. The manuscript dealt with types of co-operation in which farmers participated, including processing by creameries and cheese factories, selling (e.g., grain elevators), buying (e.g., farmers' stores), credit, insurance, and irrigation. The primary material used in preparing the manuscript was obtained largely through correspondence. The aim in preparing it was to "present the dangers to be avoided, the requisites for success, and the actual conditions that have been or are encountered."[2]

[1] G. K. Holmes, *Farmers' Cooperation*, (unpublished manuscript, 1901). A bound copy of this typewritten manuscript of 432 pages, copied from the original in October, 1935, is in the U. S. Department of Agriculture Library.
[2] Holmes, *Farmers' Cooperation*, p. 13.

The Office of Markets was interested in agricultural co-operation from its beginning in 1913. In that year the Chief of the Office said:

> In connection with the coöperative organization work we hope not only to carry on investigations, but to give concrete sensible help wherever we can, according to the men and means at our disposal. In changing to the coöperative system we must be reasonable in our expectations. Too many people think it a panacea for all their economic ills. They expect money returns wholly beyond any to which the facts entitle them. . . .
>
> Coöperative organizations on the land will not of themselves be sufficient, as economy there effected may easily be absorbed at some later stage of distribution, thus again benefitting him who deserveth not. Only by performing some or, where possible, all of the functions of our present middleman system can we hope to return to the farmer all of the benefits to which cooperation entitles him.[3]

The Bureau of Agricultural Economics in the U. S. Department of Agriculture did its work in the field of co-operation in a conservative manner which in the end won the approval of those interested as participants in the movement. In 1921 L. S. Tenny was in charge of the division of co-operation. The situation was complicated at that time because many types of co-operation were being advocated and the movement was in the evangelistic stage. Organization was going ahead at unheard of speed. The claims made for co-operation were far beyond its possibilities. Stress was being laid upon price control by some advocates of the movement. That made a strong appeal to the farmers and brought them rapidly into the organizations. Under those conditions the Bureau of Agricultural Economics could not take a very active part even on the educational side of the movement. There was too much difference of opinion. For this reason it seemed wise to devote the energies of the Bureau to the study of the causes of successes and of failures, to the statistics of co-operation, to the laws and legal status of co-operation, and to answering such questions as were put up to it. Of course the Bureau gave the co-operatives the same information and service it gave to other marketing agencies and in that way proved helpful.

At the beginning of his administration, Secretary H. C. Wallace was more favorable to the centralized type of commodity marketing than to the federation built upon local units. During his first year in Washington, Secretary Wallace had a conference with Sir Horace Plunkett one evening in the Cosmos Club. Sir Horace and the Secretary appeared to be quite out of harmony in their views in regard to the merits of centralized co-operatives. After that conference H. C. Taylor sent a note to the Secretary:

> It takes more personal courage for a man who possesses the power of leadership to devote himself to the use of democratic methods and the building of democratic institutions than it does to proceed by autocratic methods. The former involves the education of the masses to wise conscious action.

[3] C. J. Brand, "The Office of Markets of the United States Department of Agriculture," American Academy of Political and Social Science, *Annals,* 50:255, 256 (November 1913).

The latter involves gaining control of the masses and directing them in accordance with the leader's plan. The former means education from the top down and control of action from the bottom up. The latter means control from the top down and less attention to education. The end in view may sometimes be attained much more quickly by autocratic methods, but the results are much less permanent and the resulting civilization is entirely different.

These two methods of approach have been made to the problem of agricultural organization. Sir Horace Plunkett is the outstanding leader of the very large group of workers throughout the world who believe in taking the time to educate the people and help the people build for themselves the agricultural organization which they require to improve their living conditions. It may be pointed out that this is the method that has led to permanent success in various European countries, notably in Denmark. And it is the one method that has until recently been used in the organization of agriculture in this country.

Recently, however, a strong movement has been led in this country by Aaron Sapiro, who uses autocratic methods. The central feature is the contract which is intended to give absolute control of the marketing of the commodity organized to the officials of a highly centralized organization. In this system the farmers do not organize themselves for the purpose of accomplishing some particular work like the marketing of cotton or tobacco. They are organied, or rather their commodity is organized, by a group of expert organizers. The education of the farmers consists largely of inducing them to sign the contract. This done, the central organization does the rest. The autocratic method is more attractive in many ways to the man who possesses the power of leadership. It is a quick method. It pays big fees to those who participate in the leadership. But is it permanently effective? The democratic method is slow and depends in a considerable measure upon the unpaid leadership awakened in the community through educational work which in turn is carried forward by workers whose pay is far from attractive. The democratic method is the way to build a permanent civilization of which a higher type of agricultural organization is an important part.

The emergencies following World War I (1914–18) may have justified the speeding up of agricultural organization by autocratic methods, but if the results are to be permanent the work must be democratized. The educational work, which will lead the farmers to organize themselves for the marketing and other functions in which they are mutually interested, must be speeded up or agricultural organization may prove to be a feudalism with its attending influence upon our rural civilization. Hence, the importance of pushing educational work on the forms and functions of agricultural cooperation and particularly the place and importance of the local unit. Equally important is the education of local leadership as a basis of democracy in agricultural organization. This great need should prove an impelling challenge to courageous young men who are looking for a real opportunity to help build for the future a great rural civilization.[4]

To endorse one type of co-operation as against another, when the two were competing with each other, was beyond the proper sphere of activity of the Bureau and yet the Bureau was at times criticized for not endorsing certain of those movements. Likewise there were those who criticized Secretary Wallace for taking the position that the county agents might teach the principles of co-

[4] H. C. Taylor, *A Farm Economist in Washington, 1919–1925,* (unpublished manuscript, 1925), pp. 222–24.

operation and act as experts when called upon to help those who desired to organize, but they could not go into the field and solicit membership nor in other ways serve as organizers.

The Bureau held to the position that it was a fact-finding, information-giving, service-rendering institution. For this position it was for a time criticized by some who were in the heat of the organization movement, who thought they knew all that was necessary to solve the agricultural problem through co-operation, and who could see but one worth-while thing for the government agencies to do — help organize the co-operatives. The principle that public money should not be used for the promotion of one type of marketing agency competing with another did not get a hearing at that time. But as time went on and the real problems of operating the co-operatives came into the foreground, Tenny and his helpers found plenty of work in helping those organizations. They supplied the "co-ops" with results of research and with market aid of the type available to any marketing company but which was particularly needed by the "co-ops" in the solution of their operating problems. In this second period the work of the Bureau came to be fully appreciated. When the leaders of co-operation came to take a broad view of the matter, they did not want the government to say, "This kind of co-operation is good and should be favored by the credit asociations on the one hand and by the farmers on the other hand." The Bureau had found it possible to be helpful in establishing better systems of accounting and making suggestions as to improvements in management which would reduce costs of operation.

Once the feverish stage of organization was past it became possible for the Bureau to lend aid to those who were thinking of organizing for a given purpose. A case in point, which illustrates the way in which the Bureau was helpful in the organization of co-operatives, is the Vermont maple sugar marketing association. The Director of Extension in Vermont, Thomas Bradlee, came to the Chief of the Bureau and said, "Our people are thinking of organizing to sell their sugar co-operatively. What do you think about the idea?" The Director was asked where the sugar was produced; how it was being marketed; how many competing buyers were in the market; what proportion of the sugar was sold for human consumption in its native form; what proportion was made more edible by mixing with other sugar; and what part of the annual production was used in the manufacture of tobacco products. To those questions the Director replied, "I cannot answer."

Director Bradlee was told that he might borrow A. W. McKay, of the Bureau of Agricultural Economics, to help in gathering facts which would give the maple sugar producers a basis for judging whether or not they wanted to organize and at the same time give them the information without which they could not hope to operate

successfully. The Director liked the suggestion, and the research work was soon under way with the county agents helping McKay to gather the facts. When the time came to organize, a modest start was made. No new capital was put into equipment, for the state had all that was needed. One of the independent companies leased privileges in its processing plant to the "co-op."

The "co-op" grew from year to year gaining in knowledge and strength and giving full play to the co-operative spirit in improvement of the marketing of maple sugar in Vermont. That was done without a fight against the old forms of marketing, but the "co-op" gave the old marketing agencies some wholesome competition.

Service similar to that rendered in Vermont was given egg marketing associations in various states. Improving the quality of the product is the great thing that co-operation does for egg marketing. The quality of the product is determined in this case primarily by the care the egg receives from the time it is laid until it reaches the consumer. Co-operation stresses this feature and provides the machinery for putting fresh eggs into the market. The Bureau had much opportunity to teach farmers the true functions of the co-operative egg marketing associations.

The Bureau of Agricultural Economics maintained the same attitude toward the cotton "co-ops" as it did toward other such organizations but was not called upon for assistance of the kind it could give until the organization stage was over and operation problems began to develop. In 1922, A. B. Cox, then of the Texas Agricultural College, was employed by the Bureau of Agricultural Economics and put into the field to study cotton marketing problems and the place of the co-operative in the scheme of cotton marketing. The work done by Cox commended itself to the officers of the cotton co-operatives and demonstrated that the Bureau could in the long run be most useful if it continued to discover the facts, dispense information, and render service but maintain a neutral attitude toward differences in form of organization.

With the growth of co-operation and the accumulation of experience, a more moderate view of its possibilities was accepted. The idea that the movement could develop a price controlling agency gradually faded out. It came to be recognized, however, that with the development of co-operation a wholesome type of competition came into the field to aid members and non-members alike. Co-operation also became a great agency for educating farmers. It led to the introduction of grading according to standards generally in use and encouraged orderly production as opposed to the hit and miss method of producing without regard to the market.

The research work of the Bureau of Agricultural Economics relating to co-operatives dealt with many phases of the subject. During the ten years, 1921–30, the results of that research were recorded

in numerous bulletins and circulars.[5] One publication dealt with legal phases, one with accounting, and one with membership relations; three were historical and descriptive studies of co-operatives of all kinds; two were devoted to co-operative marketing of milk; two were descriptive of the organization and operation of the California citrus growers' co-operatives; one gave the history and the functioning of the cranberry co-operatives; two dealt with cotton and one with grain, one with livestock, and one with fruits and vegetables. In general the purpose of those bulletins was to improve the management of the agencies and to clarify the minds of readers as to what could be accomplished by farmers' co-operatives. One outstanding feature was the effort to counteract the impression that prices might be controlled through co-operation. The cranberry co-operatives were used as an example:

> Since the organized growers control approximately 65 per cent of the cranberry supply, it might be concluded on first thought that they are in position to control arbitrarily the price of their product. A brief analysis, however, will show that artificial price control is nearly impossible. It must be accepted as a fact that the forces which influence supply and demand are the forces which influence price. The cranberry growers, therefore, in order to control the price must exercise a direct influence over the forces which regulate the production of the berries, as well as control the forces which tend to govern the buying tendencies of the consumer.
>
> First, let us examine the supply side of the equation. In general, the size of the cranberry crop depends upon the number of acres in bearing and the yield per acre. The cooperative associations do not attempt to influence the number of acres devoted to cranberry culture. It is doubtful, indeed, if the association could influence acreage to any great extent.[6]

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[5] See U. S. Department of Agriculture:

Bulletin
937 "Cooperative Grain Marketing," by J. M. Mehl (1921).
1095 "Producers' Cooperative Milk-Distributing Plants," by O. B. Jesness, W. H. Barber, A. V. Swarthout, and C. E. Clement (1922).
1106 "Legal Phases of Cooperative Associations," by L. S. Hulbert (1922).
1109 "Sales Methods and Policies of a [Cranberry] Growers' National Marketing Agency," by Asher Hobson and J. B. Chaney (1923).

Department Bulletin
1150 "Accounting Records and Business Methods for Live-Stock Shipping Associations," by Frank Robotka (1923).
1237 "Organization and Development of a Cooperative Citrus-Fruit Marketing Agency," by A. W. McKay (1924).
1261 "Operating Methods and Expense of Cooperative Citrus-Fruit Marketing Agencies," by A. W. McKay (1924).
1302 "Development and Present Status of Farmers' Cooperative Business Organizations," by R. H. Elsworth (1924).
1392 "Cooperative Marketing of Cotton," by G. O. Gatlin (1926).
1414 "Management Problems of Cooperative Associations Marketing Fruits and Vegetables," by A. W. McKay and W. J. Kuhrt (1926).

Technical Bulletin
40 "Agricultural Cooperative Associations, Marketing and Purchasing, 1925," by R. H. Elsworth (1928).
57 "Cooperative Marketing of Livestock in the United States by Terminal Associations," by C. G. Randell (1928).
179 "Cooperative Marketing of Fluid Milk," by Hutzel Metzger (1930).

Department Circular
397 "Farmers' Cooperative Business Study — The Staple Cotton Cooperative Association," by A. V. Swarthout (1926).
403 "Business Set-Up of a Cooperative Marketing Association," by C. L. Christensen (1926).
407 "Membership Relations of Cooperative Associations (cotton and tobacco)," by J. W. Jones and O. B. Jesness (1927).

[6] Hobson and Chaney, "Sales Methods and Policies of a Growers' National Marketing Agency," *Bulletin* 1109, pp. 23–24.

Successful marketing consists largely of accurately gauging the factors of supply and accurately estimating the factors of demand with a view of anticipating the price which will coordinate these two sets of forces. . . .

. . . the success of the association depends not so much upon influencing the market as on putting itself in position to gauge the factors which influence the sale of its product. Thus it can be prepared to take advantage of the conditions which exist.

The only price named by the exchange is the "opening price" at the beginning of the season. Market conditions set the remaining quotations. Experience has proved that it is of the utmost importance that this opening price conform closely to supply and demand factors.[7]

The cranberry associations increased the demand and thereby raised the price by improving the quality of the product and by increasing consumption through advertising.[8]

Another excerpt relating to the prices of fruits and vegetables in the 1920's reads:

Cooperative marketing, despite its demonstrated advantages, has not been sufficient to overcome the unfavorable conditions that have existed since 1920. Two fundamental factors have served to keep fruit and vegetable prices at low levels, as compared with other commodities. These, in order of their probable importance, are: (1) Production in excess of what the market will absorb at prices profitable to the producers, and (2) curtailment of the purchasing power of the consumers, to a greater or less extent, expressed perhaps by the purchase of greater quantities of more staple foods at the expense of fruits and vegetables. . . .

. . . As long as the associations are judged altogether by the price they are able to obtain for the current crop, their existence, as a class, will be precarious and the services they can render will be limited.[9]

The co-operative bargaining agency which controls the supply of milk available to the milk distributors of a given city has often been thought of as being able to dictate prices because of its apparent monopoly. A study of the price policies of that type of co-operative led to this conclusion:

The principles to be followed in establishing a price for milk in any market by cooperative fluid-milk marketing associations must follow economic laws. Although the forces of supply and demand must determine milk prices over a period of time, there are many factors which determine how quickly the price will adjust itself to these forces. Because of the hindrances to their operation in the milk business in the way of sanitary restrictions, contracts, various buying plans, customs of the trade, and possibly inadequate information as to supplies, prices are in many respects man-made. If the adjustments are instituted with skill and in accordance with economic laws, prices may be made to react in such a way as to benefit producers materially. Because of the quick reactions resulting from establishing a price out of line with supply and demand conditions, most fluid-milk cooperatives early turned from any idea of monopoly control. This in spite of the fact that many, developing during the World War I (1914–1918), were established on the principle of securing "cost of production plus a reasonable profit," and that

[7] Hobson and Chaney, "Sales Methods and Policies," p. 21.
[8] See Hobson and Chaney, "Sales Methods and Policies," pp. 2–3.
[9] McKay and Kuhrt, "Management Problems of Cooperative Associations Marketing Fruits and Vegetables," *Department Bulletin* 1414, pp. 2–3.

their prices, during the war, were based largely on the estimated cost of production.

To be successful over any extended periods, a price policy must meet the needs of the situation involved. It must establish a price that seems fair to both producer and consumer. From the producer's standpoint the price must not be so low as to make his production unprofitable. From the standpoint of the consumer it must be low enough to allow him to purchase an adequate supply. The two-fold aim will be most nearly accomplished if the price established is such that the quantity produced and the quantity consumed will be maintained in such balance that drastic readjustments will not take place.

The quantity of milk produced responds quickly and markedly to changes in prices of milk and of feed (particularly the concentrates). The quantity of fluid milk that the consumer will buy is only slightly affected by moderate changes in price. If the price is placed either too high or too low, production may be adjusted to the new level of prices long before what is taking place is definitely recognized. If the retail price is too high its effect on consumption may be slight. If producers' prices are at a corresponding level the result is likely to be a supply of milk greatly in excess of the quantity required for consumption in fluid form. However, the period required for this reaction to become effective may vary from two months to more than a year. If the prices are too low consumption may be increased a little, but in a relatively short period production may fall off until it is not sufficient for fluid requirements. In that case, prices must be advanced, which will stimulate production again and tend to cut down consumption, or other areas must be drawn upon to make up the deficit, or both. If the distributors continue to receive milk from the outside areas, when the regular producers respond to the increase in prices or when their production increases seasonally, the market will be called upon to absorb more milk; in the end this must result in lower price.

Before any cooperative-marketing association can intelligently determine what course to follow in establishing a price it should know the basic facts as to the relation of price changes to production in its territory and the relation of price and price changes to consumption.[10]

In general, the series of bulletins on agricultural co-operation emphasized improving the quality of the product, selling on the basis of grades and standards, orderly movement of the product into the markets, efficient management of the business, and an educational program to encourage a wide demand for the product. The emphasis was on good service and finding a market for the product at such prices as the conditions of supply and demand determined.

The policy of the U. S. Department of Agriculture with respect to farmers' co-operative associations was not formally defined, but there was a thorough understanding between Secretary H. C. Wallace and Taylor, Chief of the Bureau of Agricultural Economics, regarding the services to be rendered the co-operatives and the attitude to be taken with respect to the different forms of co-operation. As a part of in-service training of the Bureau of Agricultural Economics staff, Secretary Wallace was asked to attend one of the Monday morning

[10] Metzger, "Cooperative Marketing of Fluid Milk," *Technical Bulletin* 179, pp. 46–47.

staff conferences and present his views on the subject of co-operation. Wallace did so on February 18, 1924. He said, in part:

Everybody seems to be talking cooperative marketing. People who don't know anything about it are endorsing it one hundred percent. It is being pointed out as the way by which farmers will achieve salvation — financial salvation. Now that has been a matter of some concern to me, and I think it has been to everyone really interested in the cooperative movement. The tendency with a great many of those people is to assume that the mere organization of a cooperative is the solution of their troubles, but of course those who have some knowledge of cooperatives know better than that. Between the farmer and the consumer stand a lot of middlemen. I doubt whether there is any middleman along the way that was not needed originally. That is, he was able to establish himself and to build up a business because he saw something to be done that other people were not doing, so he said, "I will do this." So he began, and as a result he established himself in business. Now the idea that a group of farmers can get together, organize into a cooperative association, and forthwith wipe out all these middlemen is absurd. And we can look back over the wrecks of cooperative marketing caused by that wrong idea.

It seems to me two or three things are fairly clear. A cooperative marketing association cannot be successful unless it renders a service equal in value to the service that has been rendered by the middleman whom it seeks to displace, and at a price not very much greater. A cooperative association really has to do the thing better or cheaper in order to continue to exist because there is a centrifugal force in every cooperative organization that tends to put members away from it. . . .

Now beginning with the activities of the Department, I think the first question we should ask is, is it possible for a well organized cooperative marketing association to do the things that the middlemen who have built up their own business along the way are doing? Can cooperatives do them as well, or better, or cheaper? If we cannot answer those questions in the affirmative, I would doubt that we ought to say to a group of farmers organizing, "Yes, go ahead." On the contrary, I think we should emphasize the impossibility of determining in advance whether a cooperative organization can do those things better or cheaper. We all know a good deal about the kinds of cooperative organizations. . . . One type is good for one situation but may not be good for another. This warfare between those that want to do the whole thing one hundred percent perfect and those that want to learn step by step is not a good thing for the cooperative movement.

Now the U. S. Department of Agriculture must try to steer a clear course on these matters. I think the Department cannot set itself up to say that one particular type of cooperative marketing is the only type that can be successful; I think we cannot take that position. This is a Department of service. If you have a group of farmers who have clearly in their minds what they want to do, if what they want to do, as shown by our experience, is doubtful of success, I think we should be perfectly frank in telling them so, but if they persist in their own views, and want to put over their own plans, then it seems to me it is our business to be as helpful as we can in giving them all the service we can give them that will help them to succeed along the lines they have marked out. I know there are some people who will not agree with us on that. That is, there is a very militant group that believes that they and they alone, know how to organize a cooperative. But we are a Department of service; we are virtually a Department under obligations to all the people, supported by the money of all the people, and I don't see how we can take an arbitrary stand.

There is a service which the Department is rendering, upon which all of these cooperative men depend. It is our work in grading — in standardizing. Some of these cooperatives feel they have been successful because of adhering to particular kinds of cooperative. They ignore altogether the fact that, after all, their whole success is based on the standardization, grading, and allied work of this Department. No, it doesn't matter what type of cooperative— whether large or small — its success will depend first upon its preparation — intelligent preparation — of the grades of commodities it handles for market. That is the first step. Standardization and grading is a great piece of work. I feel that our Department can and should strengthen its work in that direction. Take States like Illinois, Iowa, Missouri, western Nebraska and Kansas, where diversified farming is at its best. It is going to be very difficult in those States to build up the type of commodity marketing that is so successful in regions specializing in one crop or another. I rather think that this Department ought to work out a much more definite program in that area of diversified farming than we have. Certainly those are things this Department ought to do through its Cooperative Divisions in the Bureau of Agricultural Economics and through its extension service. There is another thing we have to remember in this connection, that on a falling market cooperative marketing is always stimulated, and many of the cooperatives are begun when prices are low. It is a very different thing to run an organization successfully on a rising market, and a lot of these organizations are going to tip over the other way. We have to anticipate that and be ready to be helpful in the matter of standardizing, of accounts and auditing, and everything that goes with the mechanics of a cooperative association. We ought to be one hundred percent helpful; we ought to be ready to serve better than anyone else can serve. As I told you in the beginning, my ideas are not well arranged. I have just touched some of the things that occurred to me on the spur of the moment. I don't want them to be considered definite, determined policies, but merely suggestions to you who are giving a great deal more attention to these problems than I can hope to. . . . I do want you to know I am tremendously interested in cooperative marketing and anxious that this Department should be recognized as the place where these people can come for help. . . .

If this Department should become an aggressive promoter of cooperative marketing, we would get into difficulties, because we cannot control the form it may take. . . . I think you cannot lay out a program to be followed in every case; I think we have to meet those situations as we come to them. Just in the family here, I have had the feeling for six months that the cooperative movement is being over-emphasized. I am thoroughly in favor of cooperative associations among farmers, and yet I don't regard the organization of cooperative associations as the solution of our troubles. It will result in some saving if there is a real field for it and it is well conducted; in the case of some crops it ought to result in a helpful influence on price, but dangers always accompany success in that line. For example, just now I am in conference with some of the people on the Pacific Coast. They are suffering because of the very success which attended their efforts a few years back, and this Department is going to be called upon to help them work out of a very bad situation due to the success of their movements a few years ago. . . .

We should be just as helpful as we can where groups want to organize. I expect some of the criticisms of our Department are to some extent well founded. Now I suppose we have people in this Department who are not in complete sympathy with cooperative marketing. If we have, I think they should refrain from embarrassing the Department by criticizing individuals. I think that if we don't agree with everything some individuals or groups

are pushing so strongly, we should exercise a little judgment, because there is no use in bringing needless friction to the Department. . . .

They [the staff members of the Bureau of Agricultural Economics] can make it clear that we will give all the service we can. We want to be as helpful as we can. Also make it clear that it is not the position of this Department and not the proper activity of this Department to help organize or endorse any particular organization. There is a very good reason for that. Having no voice in the operation of an organization, we cannot be expected to be responsible for it. But we are anxious to make available to any organization of farmers all of the service which this Department can render to them. . . .

If we have the opportunity to make a thorough analysis of the operations of a cooperative organization, why should we not do that and just simply present the total results without any criticisms or commendations. That is we can say, if conditions will bear it out, that the overhead expense seems to have been very high and go on to point out why. Or we can say that a particular phase of the work has apparently been conducted in a very excellent manner, and point out why. But we should not undertake to use that as an outstanding example of success of the business; neither should we go further than to point out the reason for failure without adding any criticism. I suppose it would be a very good thing for this Department to go through the books of each cooperative organization and make the results public. That is, it would be helpful, but the danger attending is that we would be accused of favoring or not favoring this one, that one, or the other one. Admittedly the problem is a very difficult one for us to handle. I don't believe we can go further than to lay down certain principles which we believe, if applied, will make for success. I doubt whether we can go much further than that except as special problems come up that we have to deal with as they come. But I think a great many of you are much better qualified to pass on these questions than I am because you have given them more thought. We, individually, should refrain from saying things that may lead to a misunderstanding of the Department's attitude. I think unconsciously we have said things and done things that give the public the wrong impression of this Department. I think we should be more careful.[11]

While that statement was made informally, it became the policy of the Department. Wallace favored co-operation for what it was good for. He felt that too many people were hoping for the impossible from co-operation. He felt that unfavorable price ratios, the low purchasing power of farm products, arose from causes which could not be removed by co-operative associations. He had suggested the export commission plan three months before he made the above statement and was at the time encouraging those who were insisting on "equality for agriculture." When, in the fall of 1923, Eugene Meyer, Jr., and Frank W. Mondell were sent by President Coolidge through the wheat region of Minnesota, the Dakotas, Montana, Idaho, Washington, and Oregon, preaching co-operation as the solution of the farmer's price problem, Wallace was not in sympathy with the move. At the same time, he sent a member of his staff through the same area to ask what the farmers thought about the situation.

[11] Stenographic report of informal talk by H. C. Wallace before the Bureau of Agricultural Economics "Monday morning conference," Feb. 18, 1924. Quoted from typewritten minutes, pp. 3–12. (In H. C. Taylor Archives.)

He found that unfavorable price ratios were credited by farmers as the cause of their difficulty. The farmers were practicing co-operative marketing, and they knew that co-operation did not reach the seat of the malady.

The work in the field of co-operation received sanction and support from Congress. On July 2, 1926, Congress created a Division of Co-operative Marketing in the Bureau of Agricultural Economics.[12] In 1927, Lloyd S. Tenny reported:

> . . . This division [of cooperative marketing] is now well organized, having a corps of able specialists who are not only thoroughly familiar with the principles of cooperative marketing but are in addition experienced in the production, handling, and marketing of farm products. These men are in constant touch with cooperative managers and directors in working out methods by which cooperative marketing and purchasing by farmers can be made more effective. Farmers are increasing their demands for information leading to better production, better grading and standardizing of products, improved marketing methods, and skillful administration of the market supply in connection with their cooperative activities. This attitude on the part of farmers promises much for the future of cooperative organization. Through the Division of Cooperative Marketing, all of the facilities of the bureau are drawn upon to furnish information which is helpful to farmers in successfully meeting their organization and production and marketing problems.[13]

The Division of Cooperative Marketing remained in the Bureau of Agricultural Economics until October 1, 1929, at which time it was transferred to the Federal Farm Board by executive order.[14] The report of Chris L. Christensen for the last year the Division was in the B. A. E. indicates that servicing the co-operatives had become an active part of the work and that the research work of the Division was directed with a view to improving the quality of the service rendered to the farmers. The report states:

> . . . Many large cooperatives now make it a practice to consult the division [of cooperative marketing] before initiating or modifying any major policies. Consequently, there is an almost constant demand for assistance in formulating, financing, operating, and merchandising policies. The trend toward centralization of sales and the federation of several cooperative units also creates demand for assistance in developing organization plans with reference to both the legal and the business set-up of the cooperatives.
>
> Demand for service by cooperatives emphasizes the importance of the research of the division. The need for the collection and analysis of data regarding the organization and operation of cooperatives becomes more apparent as the functions and responsibilities of the associations increase. The service of the division becomes increasingly valuable as its fund of facts becomes greater. Approximately 60 per cent of the work carried on by the division at present may be classed as research, and it is highly desirable that this ratio should be maintained.

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[12] U.S.D.A., Bureau of Agricultural Economics, *Report of the Chief,* 1927 (Washington, 1927), p. 1.
[13] *Report of the Chief,* 1927, p. 1.
[14] *Report of the Chief,* 1929, p. 44.

Research was continued along the four major lines: (1) Study of the development and problems of cooperative-marketing associations within each major commodity group; (2) business studies of individual cooperative associations which have been operating over a period of years, in which a detailed, critical analysis is made of organization, membership relations, pooling and accounting methods, financing, management policies, and merchandising practices of individual associations, and of the external economic factors which affect their operations; (3) research in legal phases of cooperative organization, financing of cooperatives, membership relations, and educational methods; and (4) studies of cooperative purchasing of farm supplies.[15]

Minnesota

In 1913 the state legislature of Minnesota enacted a law requiring the Department of Agriculture of the University of Minnesota "to collect statistics and information in reference to co-operative associations among farmers and the management and methods of conducting such associations."[16] During the years 1912–32 roughly three-fourths of the marketing bulletins of that Department related to farmers' co-operatives. There were four significant bulletins relating to other aspects of marketing, and two had to do with the organization of creameries and potato warehouses in which co-operatives were studied along with line and independent agencies. Fifteen or more dealt with farmers' co-operatives. L. D. H. Weld, in 1914, did the first of those studies on the status of farmers' co-operatives in Minnesota.[17] That report gave the geographical distribution of the different classes of co-operatives throughout the state and indicated the number of co-operatives and the dollar volume of business. Creameries, elevators, and livestock shipping associations were the marketing co-operatives of outstanding importance. The bulletins on co-operation, particularly the earlier ones, were largely statistical and descriptive. They described the development and function of the farmers' agencies in preparing for the market and marketing major staples of the agriculture of Minnesota.

L. D. H. Weld, W. W. Cumberland, John D. Black, and O. B. Jesness were, in succession, at the head of the work in agricultural economics at Minnesota from 1913 to 1932. So far as we have discovered, the idea that co-operation is the principal means of solving the farmers' marketing problems was at no time challenged by any of those men.[18]

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[15] *Report of the Chief*, 1929, p. 44.

[16] *Minnesota Session Laws*, 1913, Chap. 386. Approved April 19, 1913.

[17] L. D. H. Weld, "Statistics of Cooperation Among Farmers in Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 146 (University Farm, St. Paul, 1914).

[18] In a letter to H. C. Taylor, dated May 5, 1948, J. D. Black said: "While Weld was at Minnesota, he devoted most of his individual attention to a study of the Twin Cities grain and livestock markets. These studies were never distributed widely. They were used within the area. They amounted in effect to a justification of the operation of these markets in their then existing form. Of course they brought him under a good deal of attack."

W. W. Cumberland had shown interest in co-operation. He had submitted a Ph.D. thesis at Princeton on co-operative marketing, just prior to his appointment at Minnesota. See W. W. Cumberland, *Cooperative Marketing* (Princeton: Princeton University Press, 1917).

In the earlier developments in the farmers' co-operative movement in Minnesota, the motive was to provide a means of processing certain materials into a marketable product or to perform some local marketing service. Milk, for example, needed to be converted into butter or cheese, for which a market could be found. Local co-operative grain elevators were organized either because local facilities were lacking or because it was felt that the line elevators were charging too much for their services. Many believed that local co-operation which would perform the above services was all that was required, that when the grain, butter, or cheese entered the central market there was adequate competition to insure fair prices.

In the 1920's the question of central market agencies became one of the major issues in the field of co-operation. There were many who believed in local co-operation who felt that the effort to organize a central market co-operative selling agency was not desirable. They believed it important for the farmer to come in close touch with the co-operative agency of which he was a member in order to know the agency was being efficiently and honestly managed. They believed that the necessary close contact was not possible with a central market agency. It came to pass, however, that co-operative agencies in central markets were developed, some of which performed valuable services for the farmers, and for the consumers as well. The issue of agencies in central markets was discussed by Black and Price in a bulletin issued in 1924. Much attention was given in that bulletin to the form of organization:

> Any analysis of co-operative associations in the central markets soon reveals the fact that there are two important types so far as methods of operation, form of organization, and purposes are concerned. These are the so-called "federated" type and the "centralized," sometimes called "commodity," type. Altho different organizations within each type vary greatly, four important differences are always present. Stated in terms of the centralized type of organization, these differences are as follows: (1) Abolition of the local co-operative unit as a pooling unit; (2) membership in the central organization or some mechanical subdivision of it, rather than in the local unit; and membership contracts on the same basis; (3) complete control of the product — as to "when" to sell it and as to "where" to sell it, and how to grade and pack it; (4) control of all or a large part of the supply in order to be able to name a price and make it effective.[19]

Those in close touch with the co-operative movement in the 1920's at once recognize the centralized type as the one which was promoted so vigorously and yet so subtly by Aaron Sapiro.[20] The federated type was a natural growth in the effort to improve the

[19] J. D. Black and H. B. Price, "Cooperative Central Marketing Organization," Minnesota Agr. Exp. Sta. *Bulletin* 211 (University Farm, St. Paul, 1924), p. 99.

[20] While Sapiro was not mentioned in the bulletin by Black and Price, he was not out of mind. In a letter from J. D. Black to H. C. Taylor, May 5, 1948, Black said: "Minnesota Bulletin 211 . . . was something of an epoch in the field of cooperative marketing. The edition of 10,000 was exhausted within six or eight months. It was used more or less as a textbook on cooperative marketing for several years. It struck at the Sapiro philosophy while the iron was hot."

marketing facilities of local co-operative creameries, cheese factories, grain elevators, and livestock shipping associations. To quote further from Black and Price:

> . . . Centralized organizations predominate in the south and west, where the chief products are perishable, are poorly standardized, and are marketed through decentralized marketing systems. Federations are more common in the North Central states, where local co-operation is best developed and where the principal products are staples, are better standardized, and are marketed through centralized marketing systems.
>
> Milk producers' associations obviously do not fit into this classification and they are not included in the number of organizations summarized. They are really locals that coincide with the whole market area and that emphasize the control of a large part of the supply because the milk distributing business is in a relatively few hands.
>
> Other characteristics, as the length and use of the membership contract, provision for damages for breach of contract, method of incorporation (stock vs. non-stock with subsidiary warehousing corporations), handling non-member business, combining the marketing of two or more products, selling methods, and the degree of integration, might also be noted. These differences, however, when applied as tests to the centralized and federated associations, do not prove to be decisive. For example, centralized associations are predominantly non-stock corporations; yet many federations, as the Michigan Potato Exchange, take the non-stock form. The way in which these two types of associations handle marketing problems at the central market is after all much more important than these distinctions in form of organization.
>
> An analysis of the form of organization of these associations does show, however, that the program of the centralized type is fundamentally legalistic and involves tying the growers firmly to a rigid, formal organization frequently set up according to political divisions, with all the necessary legal devices to compel members to obey all the provisions. The federation program, on the other hand, is more democratic. It proposes to accomplish the same end by leadership, education, and incentive, and leave the member more free to follow instructions or not as he sees fit. It has faith that if the central federation performs its part well, the members will be loyal to it. Its organization is therefore built on the basis of natural social and economic groupings. This is the most important difference between the two types of organization.[21]

With regard to the relative merits of the two types of co-operatives, the preference of the authors seems to be indicated in these paragraphs:

> A local association is a desirable feature of an overhead organization. It establishes between the central organization and the individual producer the contact needed for carrying on educational and publicity work, while at the same time the producer's active participation in the management of the local commands his sympathy for and loyalty to the policies of the central. Moreover, in case the central fails, the locals still provide a market, and the foundation for the building of a new central organization.
>
> The status of the local in any marketing system should depend upon the nature of its marketing problems. The tendency among federations is to curtail the authority of the local in the matter of sorting, grading, and pack-

[21] Black and Price, "Cooperative Central Marketing Organization," pp. 99–100.

ing, and controlling distribution. Centralized organizations, on the other hand, are organizing locals. Future organizations will therefore doubtless represent various degrees between the extreme federated type and the centralized type, each adapted to the problems of the specific product marketed. . . .

. . . The real problems of co-operative marketing are the problems of control of quality, pooling, forecasting necessary price, and feeding the market, financing, distribution, and the like. It is upon our success in solving these that success in central marketing will largely depend. . . .

As one examines the history and records of co-operative central marketing organizations in this country and abroad, one conclusion stands out clearly from the start, namely, that there is no magic formula that insures success on every occasion. . . .

Perhaps it is appropriate to ask at this point what gains reasonably can be expected from a central marketing organization. . . . As a sort of rough average of all commodities, the authors believe that the *potential* gains on Minnesota products from several of the most important improvements in our marketing system, or in production as it relates to marketing, rank in importance about as follows:

1. By stabilizing production — adjusting it to changes in demand and to changes in the business cycle, and eliminating cycles of production.
2. By improving the organization and management of the locals or in other ways performing the local market functions more efficiently.
3. By improving the quality of production by standardization of varieties, better selection and treatment of seed, better care of the crop, better harvesting methods, etc.
4. By controlling the time of movement to market.
5. By better sorting and grading.
6. By better distribution between markets.
7. By advertising, especially advertising an extra large crop, and by developing new markets.
8. By securing equality or better in the matter of bargaining, and taking away from buyers any possible monopoly advantage they now enjoy.

Obviously, the ranking of these eight points for butter is much different from the ranking for wheat or corn or livestock or potatoes. Also the ranking for Kentucky or Texas or California would be different from that for Minnesota.

Also, the foregoing ranking is on the basis of potential gains, not probable gains. Altho potential gains from stabilizing production are great, the probable gains from this source are not very great in the next few years—this is a problem for generations, even centuries. . . .

In the end marketing will be efficient in proportion to the intelligence, skill, and understanding of those who are responsible for it. One of the weaknesses of co-operative marketing of farm products is that responsibility for it rests in the last analysis upon the farmer, and farmers suffer severely from a vast amount of misinformation on matters relating to marketing and prices. Milk producers' associations, for example, suffered a great deal at the start and still suffer at times because of mistaken notions of their members as to the relation between price and cost of production. A state wheat growers' association even as late as 1922–23 decided to hold its wheat for a higher price partly because the management believed that the price of wheat could not possibly stay so far below the cost of production for more than another month or two. Surely it is highly necessary that those who

are presenting plans for better marketing shall on all occasions use only right information, correct analysis, and sound arguments. Better frequently that a particular organization wait a few years before getting under way, than that it be sold to the people on the basis of a whirlwind campaign of misinformation and exaggeration. It may take a generation or two to root out the evil that is thus planted, and all the while it is bearing bitter fruit.

In this connection, it can not be too strongly urged that the proper basis upon which to put over a campaign for membership is not one of developing or appealing to class hatred. The Capper-Volstead Act and the Minnesota co-operative acts are not "vicious class legislation," as is sometimes stated even by their defenders. They are legislation in the public interest, never would have been passed on any other basis, and would not stand the test of the courts on any other basis. An old-fashioned concept of class legislation made it include any legislation designating a special class for special treatment. The criterion at present is whether it benefits or injures one class. As J. D. Miller, of the Dairyman's League, so well states: "The law is not so poor a thing that it prevents the state from authorizing combinations that will promote the public good and at the same time prohibit combinations detrimental to the public good."[22] The cooperative marketing program should be presented to the growers on the basis that it will inure to the common good as well as to themselves. It should be presented to the general public as well as to the growers; and it should be presented to the public fearlessly on the basis here outlined.[23]

By no means all of the discussions of the two forms of central market co-operatives were as scientific as that by Black and Price. At times considerable heat was manifest in the conversations of the time on the part of both the advocates of "building from the group up" and the advocates of "building from the top down." Many fell in line with the latter because they thought it gave promise of providing a means of supporting prices. When it was found that in most instances too little of the product could be contracted to greatly influence the price and that outsiders benefitted more than the members when the centralized co-operative held the product off the market to improve the price, the tendency was for many of those who had looked to the co-operative as a means of price control to turn to some form of government aid in price maintenance. It has been said that it was necessary to pass through the co-operative stage in order to arrive at the government control stage.[24]

Not only the University but the Minnesota State Department of Agriculture did some active thinking about the farmer's marketing problems. In 1920, H. J. Hughes, the Director of Markets of that Department, gave "the gist of the matter" in the following ten statements which presented co-operation as the means of solving the marketing problem:

1. Minnesota produces a vast amount of human food products, the bulk of which are consumed beyond its borders.

[22] Cornell Law Quarterly, 7:309 (June 1922).
[23] Black and Price, "Cooperative Central Marketing Organization," pp. 107, 108, 109, 110, 111.
[24] Statement by J. R. Hutcheson, President of Virginia Polytechnic Institute, made to H. C. Taylor on April 24, 1945.

2. To find and to reach a suitable market is our greatest agricultural problem.
3. Improvement of the physical machinery of marketing — our roads, railroads, storage facilities, terminals, waterways — is vitally essential to quick and cheap transportation.
4. Satisfaction of the market demand calls for a knowledge of consumer wants, and the meeting of them through the production of the kind and quality most in market demand.
5. Most of the marketing difficulties complained of by both producer and consumer center around the ownership and management of distribution, rather than around the methods employed to connect producer and consumer.
6. Existing ownership of the machinery of marketing, where it is efficient, and satisfactory to the producer or consumer, should not be disturbed.
7. Co-operative ownership, by the farmer, of the machinery of marketing at least as far as the point where the farm product loses its identity or where it reaches retail distribution is offered as the best available solution of the farmers' marketing problem.
8. Co-operative ownership of retail agencies, such as grocery stores, meat markets, milk depots and the like, is suggested as a practical solution of the unnecessary expenses of living borne by the consumer.
9. State supervision for the purpose of establishing fair barter and exchange is held essential.
10. Plans for co-operative ownership and control of distribution are outlined.[25]

A book published in 1927, prepared by members of the University faculty and graduate students,[26] indicates that the agricultural economists of the University of Minnesota were broadly interested in the economics of marketing agricultural products, of which co-operative marketing was only one phase. The book is largely an objective description of the agencies, private and co-operative, that performed functions involved in the handling of farm products in the twin cities of Minneapolis and St. Paul. The central market operations of co-operatives in the sale of butter, grain, livestock, milk, and potatoes were described. There was indication that central co-operatives work best when closely affiliated with local co-operatives.[27]

By 1931 the motor truck had become an important factor in the marketing of livestock in Minnesota and was modifying the conditions which had given rise to co-operative livestock shipping associations. The authors of a bulletin on this subject said:

. . . Formerly it was necessary for producers to co-operate in loading carlots if they were to sell at terminal markets. Today, in a large territory around South St. Paul, it is possible for the farmer to call a trucker and have his livestock hauled direct from the farm to the terminal market for sale. Many

[25] H. J. Hughes, "Marketing Problems of Minnesota Farmers," Minnesota State Department of Agriculture, *Bulletin* 11 (St. Paul, 1920), p. 3.

[26] *The Marketing of Farm Products*, ed. by H. B. Price (Minneapolis: The University of Minnesota Press, 1927). The following members of the faculty and graduate students wrote the chapters: H. B. Price, Mildred Hartsough, E. W. Gaumnitz, C. C. Zimmerman, C. M. Arthur, A. L. Johnson, C. F. Clayton, C. B. Howe, E. C. Johnson, E. M. Daggit, W. C. Waite, R. C. Engberg, Holbrook Working, and J. D. Black.

[27] *Marketing of Farm Products*, p. 132.

producers have found the latter method more to their liking, with the result that in many communities where livestock formerly was marketed by co-operative shipping associations it is now shipped by truck and the shipping association has passed out of the picture. . . .

. . . The truck is established permanently as a means of transporting livestock within a large territory surrounding this market. With further improvements in roads we can expect that the use of motor trucks will continue to increase. The convenience and flexibility of the truck appeals to the producer, which is another factor contributing to the permanency of truck transportation.[28]

It was pointed out that new occasion for co-operation had arisen with the motor truck method of transporting livestock to market:

. . . Producers have the opportunity to form district associations to contract with truckers for hauling livestock at definite rates. If a large membership is obtained at local points the trucker would be more assured of full loads and, therefore, should be able to offer the association more favorable rates than individuals. A district secretary employed part time could see that the truckers live up to their contract and provide reliable service. By authorizing commission agencies to make a small deduction from returns, a fund could be provided to maintain the organization and provide insurance against loss at a low cost.[29]

Wisconsin

From 1913 to 1918 the policy of the University of Wisconsin was to carry on marketing research and education but to leave more active relations with the co-operative associations to the farmers' organizations. After 1918 a policy of active service for the farmers' co-operatives was adopted.[30] B. H. Hibbard became Chairman of the Department of Agricultural Economics at Wisconsin when H. C. Taylor was called to Washington in April, 1919. In 1920, and again in 1926, bulletins were issued on the co-operative marketing of livestock. The 1920 bulletin was largely descriptive.[31] The 1926 bulletin gave more attention to methods and to the conditions of successful operation of co-operative marketing associations and the causes of failure.[32] The general results of the study were stated:

Cooperative marketing of livestock is the greatest improvement that has been brought about in the marketing of livestock within the past few years. This has been made possible by the organization and operation of local livestock shipping associations and of cooperative commission firms which are farmer-owned selling agencies at the terminal markets. Farmers have realized higher net returns for their livestock from these organizations than from any other agencies.

This type of cooperation, on account of its simplicity in organization and its quickness in showing real benefits, is adaptable to many localities where a more complicated and detailed business would have difficulty in starting.

[28] E. C. Johnson and E. A. Johnson, "Trucking Livestock to South St. Paul," Minnesota Agr. Exp. Sta. *Bulletin* 278 (University Farm, St. Paul, 1931), pp. 25, 28.
[29] Johnson and Johnson, "Trucking Livestock," p. 30.
[30] See *supra*, pp. 561–63.
[31] B. H. Hibbard, L. G. Foster, and D. G. Davis, "Wisconsin Livestock Shipping Associations," Wisconsin Agr. Exp. Sta. *Bulletin* 314 (Madison, 1920).
[32] T. Macklin and M. A. Schaars, "Marketing Livestock Cooperatively," Wisconsin Agr. Exp. Sta. *Bulletin* 381 (Madison, 1926).

A shipping association is an organization of farmers which assembles and ships livestock cooperatively. Instead of selling the livestock individually to local buyers, the members bring their stock to the local stockyards and ship it collectively to the terminal markets for sale.

Owing to the nature of the business, little if any capital is required. All livestock is paid for after being sold at the central market. Since it takes only about three days from time of shipment until the shipper gets full payment for his stock, the slight delay in payment works no hardships on farmers. The speed and simplicity of operation, combined with its favorable prices, make the work of shipping associations widely popular with farmers.[33]

The conditions of success were summarized:

Hiring a competent well-liked manager.
Preparing livestock properly before shipping.
Listing and delivering listed stock.
Paying cash after all stock is sold at market.
Shipping full loads of stock of as uniform grade as possible.
Pooling expenses over a period and charging a flat shipping rate.
Paying for livestock on a strictly graded basis.
Keeping accurate accounts of all business operations.
Perfecting terminal cooperative selling agencies.[34]

The Wisconsin Cheese Producers' Federation continued to be a laboratory for the study of collective action in the sale of farm products. In a bulletin which drew largely upon the six years of experience of that co-operative effort, two of the problems of the Federation were described:

. . . First, it was obliged to pay farmers for cheese before the cheese was sold. Second, it lacked connections which would enable it actually to sell cheese. With no outlets of its own, it was forced to sell to other cheese concerns which had contact with consuming centers. It was unavoidable, therefore, that the cheese federation should sell most of its cheese during the first few years to large packers and others with numerous and dependable cheese customers. This, however, was remedied as soon as the management was able to go out and solicit its own regular customers. How much this customer trade has been built up is shown by the fact that during 1919 less than 6 per cent of the Federation's cheese was shipped to the five larger packers. The early lack of market connections which was the most serious weakness of the Federation had been largely overcome.[35]

The progress of the Federation is indicated in this paragraph:

. . . During 1919, it handled 6 per cent or 14,098,021 pounds of the total of 235,740,173 pounds of American cheese produced in Wisconsin. Far more important than volume of business, it has shown that Wisconsin farmers can unite their local associations. It has proved that such federations can hire experts who will efficiently sell products in consuming markets. Futhermore, it has made Wisconsin farmers think in terms of comprehensive marketing systems.[36]

That price stabilization, through marketing by the Federation,

[33] Macklin and Schaars, "Marketing Livestock Cooperatively," pp. 3–4.
[34] Macklin and Schaars, "Marketing Livestock Cooperatively," p. 3.
[35] T. Macklin, "Marketing by Federations," Wisconsin Agr. Exp. Sta. *Bulletin* 322 (Madison, 1920), p. 11.
[36] Macklin, "Marketing by Federations," p. 12.

was in the mind of the bulletin's author is indicated by this statement:

As yet the Federation has not tried to hold over until winter the surplus cheese of spring and summer. First, it markets too small a fraction of the cheese of the state, to be able to feed the market and thereby stabilize prices. In answer to the farmers' question, "Why doesn't the Federation prevent low prices in summer?" there is but one answer. Before it can hope to do this, the federation must be large enough to keep the surplus cheese of the flush season off the speculator's market and hold it for the effective consumers' market during the following winter. That is, if farmers hope to do away with the drop in cheese prices that usually comes in summer, they must have a federation so large that it can prevent the temporary glutting of any market by holding the surplus cheese until winter before selling. A large part, or even all, of this surplus is being stored at present by private agencies. The farmers contend that there is manipulation to get this cheese at low prices. As a matter of fact, if prices were not relatively low these speculators would not buy cheese to be held over for winter sale. It is the great surplus during the flush producing season, out of all proportion to current use, which gives the speculator his chance. The only remedy worth considering by farmers is for them to retain ownership of the surplus until consumers need it. This in turn can be done only through a large, powerful federation which really feeds the market. At present the very lack of this organization makes it unavoidable for farmers to glut and starve the cheese markets periodically. For the same reason, the markets for other farm products are periodically either oversupplied or undersupplied.[37]

Thus in 1920 price stabilization through co-operative action, which became so big an issue during the decade that followed, was contemplated.

Two years later, Macklin again reported on the Wisconsin Cheese Producers' Federation.[38] That was at a time when enthusiasm for price stabilization by co-operative sales companies was running high. The statement was made:

Because of poor storing and distributing services the private marketing companies are unable to prevent needless price fluctuation. On the contrary wherever local cooperative associations have established a successful market-wide sales agency these services of storing and distributing have been so handled as to "feed" the market. That is, the farmers' products have been fed to the market instead of being seasonally dumped on it in such vast quantities that the market could not absorb them without a declining or sacrifice price. As a consequence of extending the period of marketing from a few months or from certain months of oversupply and others of undersupply to a longer period whereby sales by farmers through their marketing companies occurred about in proportion to purchases by consumers, prices have been relatively stabilized.[39]

Macklin's 1924 publication[40] contained much of the same material as his 1923 bulletin. It included, however, discussion of city fluid milk selling organizations, condensery milk selling organizations, as well as federated cheese marketing.

[37] Macklin, "Marketing by Federations," pp. 12–13.
[38] T. Macklin, "Marketing by Cooperative Sales Companies," Wisconsin Agr. Exp. Sta. *Bulletin* 346 (Madison, 1923).
[39] Macklin, "Marketing by Cooperative Sales Companies," p. 9.
[40] T. Macklin, "Cooperative Dairy Marketing Plans," Wisconsin Agr. Exp. Sta. *Bulletin* 367 (Madison, 1924).

As a part of that same aggressive campaign to promote co-operative marketing, the University issued, in 1926, a bulletin on the marketing of Wisconsin foreign cheese by federation.[41] The purpose of the bulletin was to point out to the producers of Swiss and Limburger cheese the importance of federating the local associations for the purpose of storage and sale of their product. That bulletin, like the three by Macklin on sales agencies, was a part of a vigorous educational program aimed at further development of co-operation among farmers in Wisconsin. The change in policy initiated in 1918 was being made effective through the enthusiastic promotional work of Theodore Macklin under the steadying hand of the more conservative B. H. Hibbard.

Our period ends in Wisconsin with a study of the Milwaukee milk market.[42] Discussion of the transportation problem, the surplus problem, the "base-surplus" price plan, and the growth of the co-operative sales agency were included. Regarding the latter it was reported:

> Since its inception the primary aim of the association has been to improve the price through bargaining with dealers.
>
> The activities of the producers' association have doubtless had the effect of increasing the price paid to the producers over what the prices would have been had no association existed. This relatively attractive price, however, has had the accompanying effect of a stimulating production of those producers already in the market and encouraging new producers to enter the market. The combined result has been to increase the amount of surplus milk during the last four years.[43]

A general view of the marketing work at the University of Wisconsin from 1912 to 1932 shows that from the beginning in 1912, when the first cheese marketing study was made,[44] the studies related to marketing agencies, their functions, and costs of and charges made for the services of each agency. In the early part of the period, political pressures had to be reckoned with. A few years later, and for a period of four or five years, the Equity Society retarded the functioning of the activities of the University as a service agency for farmers' co-operatives, but after 1918 the University proceeded with adequate freedom to serve the farmers. Throughout the period the marketing studies were of a scientific character. The truth was sought in order to provide a basis for right action, rather than to promote a particular idea. Co-operation was more definitely accepted as the primary means of solving the marketing problem in later years than in the earlier years of that period.

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[41] H. H. Bakken, "Marketing Wisconsin Foreign Cheese by Federation," Wisconsin Agr. Exp. Sta. *Bulletin* 380 (Madison, 1926).

[42] W. P. Mortenson, "An Economic Study of the Milwaukee Milk Market," Wisconsin Agr. Exp. Sta. *Research Bulletin* 113 (Madison, 1932).

[43] Mortenson, "Milwaukee Milk Market," pp. 53–54.

[44] H. C. Taylor, W. A. Schoenfeld, and G. S. Wehrwein, "The Marketing of Wisconsin Cheese," Wisconsin Agr. Exp. Sta. *Bulletin* 231 (Madison, 1913).

Ohio

Henry E. Erdman, while on the staff of the Ohio State University, made an historical and descriptive study of the farmers' elevator movement in Ohio.[45] Co-operative companies were, of course, included in his survey. Some brief quotations provide a few background facts:

> The real beginning of the farmers' elevator movement in the United States probably dates from the time of the Granger movement in the early seventies. In a number of states the farmers at that time owned a considerable number of elevators. But these first attempts lacked the experience and business ability that has backed the more recent efforts. Furthermore, the early companies met with the bitterest kind of organized opposition from the established grain dealers in the various states. The result was that these earlier companies were short-lived and very few, if any, are now in existence. A number were organized during the Farmers' Alliance movement of the eighties, some of which are still operating.
>
> Since 1900 the movement has taken on new life and has continued to the present. In 1902[46] the number of farmers' companies is said to have been insignificant; in 1904 there were, according to the same authority, "a few score," and by 1907 about one thousand. . . .
>
> . . . the "Farmers' Grain Dealers' Associations of Illinois". . . was started in 1902; Iowa followed in 1904. The Ohio companies did not form a state association until 1916. . . .
>
> The main force back of the farmers' elevator movement is of course an economic one, expressing itself in prices. Most of the companies have been organized as a result of the general belief that the established dealers were taking too wide a margin. . . . In a few cases farmers' companies have been started as a result of an offer to sell out made by some grain dealer. Rather than see a competing company buy a second plant the farmers have organized and purchased the plant which was for sale.
>
> To some extent the movement has been furthered by paid organizers. Cooperative effort thus started is probably less likely to succeed than if the demand and exertion comes from within. Such promoters are often inclined to make exaggerated and misleading claims, and to play upon the prejudices of the farmers — a practice which is likely to lead to disappointment and possibly failure. In the main, however, the movement seems to have been from within, a spreading from community to community as leaders in various communities learned of what was being done elsewhere.[47]

Ten years later L. G. Foster made an economic study of farmers' elevators with a view to improving the organization and management of those institutions.[48] The costs were analyzed for elevators of varying sizes, and elevators in which grain sales predominated were compared with elevators in which merchandise sales predominated. It was found that elevators with larger volumes of business were the more profitable, also that, of those with larger volumes, the merchandise group yielded greater net profits than the grain group.

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[45] H. E. Erdman, "The Farmers' Elevator Movement in Ohio," Ohio Agr. Exp. Sta. *Bulletin* 331 (Wooster, 1918).

[46] See B. H. Hibbard, "Cooperation in the Grain-Elevator Business," *Cyclopedia of American Agriculture,* ed. L. H. Bailey, 4:268 (New York: The Macmillan Company, 1909).

[47] Erdman, "The Farmers' Elevator Movement in Ohio," pp. 139, 140, 142.

[48] L. G. Foster, "Economic Aspects of Ohio Farmers' Elevators," Ohio Agr. Exp. Sta. *Bulletin* 416 (Wooster, 1927).

Co-operative marketing of livestock was also studied in Ohio and was the subject of a bulletin issued in 1924 which stated:

> The "county plan" for cooperative marketing of livestock as operated in Ohio has one company for the whole county with one board of directors. This board of directors appoints a county manager, who becomes its executive officer in shipping livestock, in handling correspondence, in receiving all "account sales" and checks, in prorating returns to the shippers, and in issuing checks to them. This manager, usually in consultation with the whole board of directors, or at least with any directors living in the respective localities, appoints local or sub-managers to take charge of shipping at such points as he cannot care for personally. The sub-managers by phone or personal visit secure information as to stock ready for shipment, notify shippers when "ready to ship" — i. e., when sufficient stock for one or more cars is available — receive and weigh the stock as brought in from the farm, mark the stock or partition the cars or both, bill out the stock to the commission firm named by the manager and send to the manager duplicates of the weigh slips given the shippers, and of the invoice sent to the commission company. He should send duplicate of freight bill also. From then on, "the manager does the rest."[49]

The bulletin showed that in 1922 the farmer got 93 cents out of each dollar paid for the hog in the central market. Of the remaining seven cents, terminal expenses took 2¼ cents, railway charges 3¼, and local expenses 1½ cents.[50]

An opportunity for Ohio State agricultural economists to give constructive help appeared when the Ohio Poultry Producers' Co-operative Association requested an analysis of its business. The Association was organized in 1924. It was of the centralized type and originally intended to cover the whole state of Ohio but became an effective organization in only four counties in the northwestern corner of the state:

> The general idea behind the contract was one of compulsion with certain reasonable exceptions. It was similar in many respects to other "ironclad" agreements that were being signed by farmers in many sections of the United States. . . .
>
> There were located in the Association territory 46 substations to which farmers delivered eggs and poultry. The attempt to improve the quality of eggs made necessary frequent deliveries on the part of farmers and collection three times a week in summer and twice a week in winter by the Association. The Association at the outset hired trucks to make collections from the substation, but soon after starting operation they were replaced by the Association's own trucks and drivers.
>
> Several factors made difficult the economical collection of eggs from the substation. The density of membership, the type of substation and the method of payment, the character of roads, and the seasonal variations in production were important factors. . . . The common method of paying the owner of the substation was on a salary basis, apparently without regard to the volume of eggs and poultry handled, and varied from $5 to $30 per month. A few stations were paid on volume which varied from ¼ to ½ cent per dozen. The number of members delivering to any one substation varied

[49] B. A. Wallace, "Cooperative Livestock Marketing in Ohio," Ohio Agr. Exp. Sta. *Bulletin* 375 (Wooster, 1924), p. 37.
[50] Wallace, "Livestock," p. 52.

from 2 to 116. A majority of the substations had under 40 members. The monthly cost to the Association per member for the services of the substation varied from 24 to 48 cents, the highest cost being at stations under 20 members. . . .

Seasonal variation in production, with substations paid on a straight monthly basis, made the cost of some substations so excessive, 6 cents per dozen, that the Association would have been better off with certain territory eliminated.[51]

High quality eggs found the best market in the East.

. . . Boston has received 75 percent of all Hennery Browns sold by the Association since its organization.

The principal markets for Hennery Whites were New York, Detroit, Boston, Newark, and Jersey City. . . .

Eastern markets received 92 percent of the Hennery Browns and 69 percent of the Hennery Whites, or a large proportion of the high quality eggs produced by the Association. Detroit was the only other market that would meet eastern prices for high quality eggs.

The price advantage of shipping to eastern markets was less apparent in low quality eggs.[52]

One of the main purposes of the organization at its inception was to improve the quality of eggs in the territory.

The common system of selling eggs to the local grocer and the private operator could be severely criticized for its failure to control the quality of eggs sent to market. Many of the present old line operators freely admitted that if better eggs are to reach the consumer's table, the change must be brought about thru cooperative endeavor. Methods of handling eggs have been on the case-count basis without regard to their interior contents. Isolated operators have made attempts to buy on a quality basis but the practice was discontinued when business began to drop off. A constructive quality program can only be brought about when the individual farmer appreciates the advantages accruing from such a program and is willing to do his part.[53]

That the members of the Association were profiting by the campaign for quality was indicated by the fact that "the local monthly average prices inside and outside of the Association territory increased; but that while the outside price increased 2.3 cents the inside price increased 3.1 cents, or the Association territory showed a gain of 0.8 cent over the price outside this territory."[54] The contract "gave stability to the organization during its formative period,"[55] but "The results of two years of operation, with one attempt to enforce the contract which was upheld by the courts, has led to the belief by the directors and many members that a contract, while of some value, is not the most important feature of the Association."[56]

The study of farmers' produce markets in Ohio was a part of the program of the rural economists at the University of Ohio to provide farmers with useful information regarding opportunities for

[51] L. G. Foster, "A Business Study of the Ohio Poultry Producers' Cooperative Association," Ohio Agr. Exp. Sta. *Bulletin* 427 (Wooster, 1928), pp. 5–8.
[52] Foster, "Poultry Producers'," pp. 9, 10.
[53] Foster, "Poultry Producers'," p. 32.
[54] Foster, "Poultry Producers'," p. 36.
[55] Foster, "Poultry Producers'," p. 38.
[56] Foster, "Poultry Producers'," pp. 5–6.

marketing their produce.[57] The bulletin described farmers' produce markets in six cities and indicated that, in general, public markets were antiquated institutions and that "farmer-owned markets in Ohio are growing in popularity."[58]

The usual retail municipal market of today is a traditional institution perpetuated from a time when the open market in the public square was fostered as a means of promoting direct interchange between producer and consumer, when traffic congestion had not yet appeared as a problem, when the public had not yet developed a distaste for the unsightly and unsanitary conditions so often prevailing about such a market place, when the roadside market had not yet come to appropriate a goodly portion of patronage, and when the sellers were themselves the producers of what they sold.

Public markets are of primitive origin, and some of the examples existing today in Ohio bear unmistakable evidence of that origin. On the other hand, those that have been wisely developed and carefully managed have continued to hold an important place in the modern system of complex distribution in their respective communities. Others might well pattern after these examples. The principal reason for the continued existence of many municipal markets in their present antiquated form lies in the lack of leadership and initiative in undertaking a change to more modern methods and facilities.

Street-curb markets are rapidly becoming relics of the past. Increasing traffic congestion in city streets, coupled with a desire on the part of buyers and sellers for better protection from the elements and for improved sanitary conditions, has in many places forced the abandonment of these markets or the substitution of some type of covered market place, located where it interferes as little as possible with traffic.

Where farmer-owned markets have been substituted for municipal markets in Ohio cities marketing conditions for both buyers and sellers have been improved.[59]

About the only markets which have reserved their facilities exclusively or largely for the use of growers are those owned by the growers themselves, altho most municipalities have attempted, with varying success, to bar all except bona fide producers from their wholesale markets. In all others space is rented to growers and dealers indiscriminately.

Each of these markets is of some importance in the distribution of foodstuffs in its community. Wholesale dealers and retailers buy considerable quantities of locally-grown produce in the municipal wholesale markets, practically all of which are located in or near the wholesale produce districts. This is one of the largest sources of supply of this kind of goods in the cities where public wholesale markets are maintained; altho, where farmer-owned wholesale produce markets have been established, they have taken over this function very largely, and are now furnishing the larger part of the local supplies bought by the wholesale trade in those cities and in nearby towns.[60]

Each of the farmer-owned markets in Ohio was established for the purpose of correcting some condition or set of conditions unsatisfactory to the sellers. The owners are those who sell on these markets, and these sellers pay rental to their own company for the space they occupy. They have readjusted their marketing methods and have taken over certain functions that formerly were performed by others or were not performed at all. In some cases this

[57] C. W. Hauck, "Farmers' Produce Markets in Ohio," Ohio Agr. Exp. Sta. *Bulletin* 443 (Wooster, 1929).
[58] Hauck, "Farmers' Produce," p. 3.
[59] Hauck, "Farmers' Produce," p. 46.
[60] Hauck, "Farmers' Produce," p. 3.

readjustment has meant the abandonment by the city of all its market activities.[61]

It has long been realized that the services of a public retail market must be supplemented by services of other food-distributing agencies. Not all of the retail food business of a modern city can be transacted in one nor, for that matter, in any number of public markets, regardless of the favor with which the public may regard this type of food purchasing. Some housewives cannot or will not come to these places to secure their table supplies. The modern grocery serves these households.

Wherever the local market is partly or entirely wholesale, it supplies local groceries with a substantial part of their home-grown produce, thereby serving indirectly a large part of the public which does not buy at the market. The "direct-to-consumer" outlet is not the only means of usefulness of a farmers' produce market; opportunities for wholesaling have often been overlooked.[62]

New York — Cornell University

The first Cornell study of marketing problems, as distinguished from price problems, was made by H. D. Phillips under the direction of G. N. Lauman.[63] That study described the efforts of the grape growers of western New York to improve their marketing situation through co-operative organizations. The local co-operatives were brought together in regional sales agencies which, one after the other, endeavored to stabilize the marketing of the grape crop. The types of organizations formed in the Chautauqua-Erie grape belt were described:

> Two general kinds of marketing organizations have been tried in the region. One is the small local type of association, designed to handle the grapes of a limited number of growers located within a single compact shipping area. The other is the large central, or belt-wide, type of organization, whose aim has been to combine all the grape growers of the region and thus to control the marketing of the entire crop.
>
> Able local leadership, greater uniformity in the character of the fruit raised within the small area, and the feeling of unity and community of interest among the members which results from personal contact, have been factors in keeping intact the membership of the small local type of association so that some of these organizations have continued in fairly successful operation for considerable periods. Their weakness has been their inability to aid the grape industry as a whole during periods of depression in the markets.
>
> Many different plans have been proposed for combining all the growers in a single large belt-wide organization. Only two of these have been able to gain sufficient support to be actually put into operation. The two associations that resulted were launched during different periods of depression in the grape industry. Each started at the outset with practically the entire grape acreage of the region pledged to its support. Neither of the two was able to retain this united support for more than a short time. Both

[61] Hauck, "Farmers' Produce," p. 7.
[62] Hauck, "Farmers' Produce," p. 4.
[63] H. D. Phillips, "Cooperative Marketing in the Chautauqua-Erie Grape Industry," Cornell Agr. Exp. Sta. *Memoir* 28 (Ithaca, 1919). G. N. Lauman was head of the Department of Rural Economy at Cornell. Phillips was a member of the staff of that Department from 1914 to 1917. He became Assistant Director of the New York State Bureau of Markets and Storage in 1919, and Director in 1920.

may be said to have failed in achieving the complete control of the marketing situation, which was one of their main objects.

In spite of the incomplete success of the belt-wide associations, they have still been able to accomplish more permanent good for the grape industry as a whole than has the local type of organization. . . .

Gains From Cooperative Effort

Though most of the organizations formed have failed to achieve the complete success hoped for, and either have been disbanded or else have suffered a decline in power, nearly all of them have been able to accomplish some things that have proved of benefit to the grape industry as a whole.

In the early days of the industry the pioneer associations induced the railroads to put in adequate sidings for loading the fruit; they were instrumental in effecting better through-freight connections, thus decreasing losses in transit and making longer shipments possible; lastly, through the device of rebates from the railroads they brought about what to all intents and purposes was a lowering of the freight rates.

As the steadily increasing production of grapes in the region during the early nineties threatened to swamp the existing markets, the formation of the first belt-wide association made it possible to open up new markets and advertise the product of the district in a way that proved of great value.

One of the most valuable results attained by the belt-wide associations has been the correction of certain trade abuses and the bringing about of better methods of sale. Their virtual monopoly of the crop during their first year of operation in each case forced the abandonment of the method of shipping on consignment and established that of f. o. b. selling as the recognized practice in the grape trade. By placing their own representatives in the markets they were able to do away with many sharp practices that had grown up, while their controlling influence made it possible to develop greater uniformity in the methods of handling the crop.

The central selling plan when in use has had a powerful effect in stabilizing the market. Better and more even distribution of the fruit has resulted in a higher average price than would have been the case otherwise, thus benefiting the industry as a whole. In periods of over-production or general depression in the markets the activities of the associations have prevented much loss to the growers. Even after their membership has declined and they have no longer exercised any complete control of the crop, their potential power has had a steadying effect on prices and has prevented the return to earlier pernicious practices in the trade which worked to the detriment of the growers.

Both the central associations and the small local organizations have accomplished much in the way of educating the growers in market practices and in the proper handling of their fruit.[64]

Soon after the Department of Agricultural Economics was created at Cornell University in 1920 by merging the departments of farm management and rural economy under George F. Warren's management, Warren put first one and then another man on the study of some phase of marketing. Warren told Taylor that the same methods were used in the study of markets that were used in the study of farm management. In 1922, Warren made a statement on methods of studying marketing:

[64] Phillips, "Chautauqua-Erie Grape Industry," pp. 75–76, 79–80.

. . . a fundamental study of the processes of marketing is needed by those who are to go into marketing work, and is a necessary prerequisite for those who are interested in improvements in the methods of distribution as a public question.

In all this work the writer believes that the agricultural colleges should follow the method of botany, chemistry, and physics in laboratory study of cases.[65]

The first bulletin on marketing prepared in the Department of Agricultural Economics at Cornell related to the marketing of New York potatoes.[66] The survey method of research was carried out by M. P. Rasmussen under the supervision of G. F. Warren and C. E. Ladd. Records were taken of three classes of dealers, namely, co-operatives, single-station and multiple-station dealers, for the seasons 1921–22 and 1922–23. In the presentation a general description of the agencies and their functions in potato marketing is followed by an analysis of the records of the shipping agencies. That analysis, covering the volume of potatoes shipped and operating costs, was given for the two years separately for each of the classes of agencies. The conclusion was that:

It would be difficult to state which of the three types of agencies here discussed performed most efficiently and economically the necessary services incident to receiving and shipping potatoes. Each type had outstanding individual representatives who operated efficiently; each likewise had inefficient representatives. The type of agency is probably not the most important factor. The primary concern is that the agency, of whatever type it may be, shall follow good business principles and be efficiently managed. This seems as likely to occur in one type of agency as in another. It is probable that these three types supplement one another very well and provide the kind of competition necessary to call forth the best efforts for efficiency and economy.[67]

The ten agencies ranking highest in efficiency on costs and on claims and allowances included five many-station dealers, three single-station dealers, and two cooperatives. The ten agencies ranking lowest included five cooperatives, three single-station dealers, and two many-station dealers. There was no one type of agency outstandingly efficient. The most efficient individual agency was a many-station dealer; the least efficient was a cooperative; but representatives of all three types of agencies were well distributed in rank throughout the whole list.

The ten agencies ranking highest in efficiency on returns included four many-station dealers, four single-station dealers, and two cooperatives. The ten agencies ranking lowest included six cooperatives, three single-station dealers, and one many-station dealer. The agency with the highest efficiency on returns was a cooperative, as was also the agency with the lowest efficiency on returns.[68]

In 1928 a bulletin by R. B. Corbett on fruit marketing was devoted to the factors affecting costs of packing fruit. The purpose was

[65] G. F. Warren, "The Relation of Farm Management and Marketing to Economics," *Journal of Farm Economics*, 4:153 (July 1922).

[66] M. P. Rasmussen, "An Economic Study of the Marketing of New York Potatoes," Cornell Agr. Exp. Sta. *Bulletin* 440 (Ithaca, 1925). (Ph.D. Thesis, Cornell University, Ithaca, 1924.)

[67] Rasmussen, "New York Potatoes," p. 152.

[68] Rasmussen, "New York Potatoes," pp. 150–51.

to increase efficiency in the local plants which were members of the federation known as the Western New York Fruit Growing Cooperative Packing Association.

> . . . the costs of packing fruit in packing houses are likely to be higher than the cost of packing on farms, due to the additional investment for packing house and equipment and to the greater care usually exercised in grading and packing in the packing house. In order to be successful, the cooperative packing houses must be efficiently operated, and some advantage in price must be obtained for the more highly standardized pack as compared with the fruit packed on farms. Efficient operation of the packing house depends upon having a moderate investment in real estate, an adequate volume of fruit to pack (usually 20,000 barrels or more), only a small percentage of cull fruit, a limited number of varieties, convenient arrangement of the packing house, and efficient management.[69]

In 1928, a bulletin by J. F. Booth, devoted to the co-operative business organization in the state of New York, contained ten pages on the co-operatives, past and present, which had to do with the making of cheese or the marketing of fluid milk.[70] Those who have noted the growth and strength of the Dairymen's League should know that New York farmers had been experimenting for many decades with various forms of co-operation. To quote:

> Much valuable experience had been gained from the various associations that had come and gone during the preceding thirty years. To that extent the efforts had not been lost. Out of it all came a new organization that was destined to play a very important part in the marketing of milk in the region tributary to New York. Producers of Orange and neighboring Counties met, in 1907, at Middletown and formed The Dairymen's League, an association which was incorporated under New Jersey laws the same year. The Grange started the movement. The new organization was to function when it had members who owned an aggregate of 50,000 cows.
>
> In 1910, the desired number of members had been obtained, and the organization was made permanent. During the next few years the membership increased steadily. Various attempts were made during this period to confer with the dealers, but without success. Matters had rapidly approached the point where further action seemed necessary. Costs of production had considerably increased by 1916, but milk prices had not kept pace with the increased cost. Finally the League members instructed their officers to take definite steps toward the sale of their milk at a fair price. A price based on costs of production was much discussed.
>
> Beginning with October, 1916, the executive committee of the League established a price for milk. A strike was called when the dealers refused to pay the price fixed by the League. During the two weeks of the strike the milk supply of the city was greatly reduced. Finally the dealers agreed to pay the price asked. Before the strike the League claimed only about 15,000 members. Six weeks later the membership had increased to 22,400. Farmers had gained the first substantial victory over the milk distributors, the result of more than forty years' efforts.
>
> From 1917 to 1919, the Federal Food Administration fixed the price of milk, but the executive committee of the League still took an active part

[69] R. B. Corbett, "An Economic Study of Certain Phases of Fruit Marketing in Western New York," Cornell Agr. Exp. Sta. *Bulletin* 464 (Ithaca, 1928), 29–30.

[70] J. F. Booth, "Farmers' Cooperative Business Organizations in New York," Cornell Agr. Exp. Sta. *Bulletin* 461 (Ithaca, 1928), pp. 15–25.

in the negotiations. When the Food Administration ceased to function, the rivalry between the Dairymen's League and the dealers was renewed. The dealers and the League announced prices for January, 1919, independently, the price asked by the League being 40 cents per 100 pounds higher than the price offered by the dealers. A strike resulted which lasted eighteen days, and was finally won by the farmers. By this time the League's membership had increased to more than 80,000. . . .

Up to this point the League had been a bargaining organization only. In 1919, however, it was decided to organize as a cooperative association to handle surplus milk in its own plants. The new company was called "The Dairymen's League Cooperative Association, Inc." Operation of country plants began in the spring of 1920, and during the fall of the same year, when many of the large condenseries closed down because of lack of European demand, the new farmers' association began the manufacturing of evaporated and condensed milk on a large scale. Early in 1921, the multiple-price plan of selling milk was adopted. All dealers buying from the association paid for milk on the new basis. Milk was divided into classifications based upon its use. Each dealer contracted with the League at stated prices for each class, and reported the quantity of milk used in those classes. Payment was made to the association for the total amount. The association then pooled the returns from different dealers, and from milk handled thru its own plants, paying all producers alike, except for freight, grade of milk, and butterfat differentials.[71]

A bulletin on co-operative agencies, by F. A. Harper, described both the marketing and the purchasing co-operative associations in New York State and gave special attention to those co-operatives handling dairy products, fruits, and vegetables.

Of the 702 cooperatives incorporated under the cooperative laws of New York up to January 1, 1931, about 24 per cent were active on that date, about 40 per cent never had been active after incorporation, and about 36 per cent had ceased operation.

Approximately two-thirds of the total number were organized as marketing associations, but the proportion of these still active was less than half as large as the corresponding proportion of purchasing organizations. The mortality was also much greater for the organizations that had been incorporated under Article 4 (the non-stock law) of the Cooperative Corporations Law, than for those incorporated under Article 7 (the stock law).

About two-thirds of the total number of cooperatives were incorporated in 1919, 1920, and 1921, closely paralleling the period of feverish cooperative enthusiasm in other parts of the country. About 96 per cent of these were incorporated under Article 4 of the Cooperative Corporations Law, and their mortality was high. Organization during this period was expressed about equally in the starting of cooperatives for the purchase of supplies and of cooperatives for the marketing of produce. . . .

More than two-thirds of the total amount of cooperative business in 1929 was in dairy products, much of which was bargaining. About half of all dairy products sold by New York farmers in that year went through cooperative channels. The membership of dairy cooperatives included about one-third of the total number of farmers in the State.

The amount of business of local cooperative milk plants increased rapidly, and apparently the plants were operated efficiently. . . .

A relatively small amount of fruits and vegetables was marketed coopera-

[71] Booth, "Farmers' Cooperative Business Organizations," pp. 21–22.

tively, although the amount of grapes constituted nearly one-third of the total cash farm income from grapes in 1929. The amount of business of the fruit and vegetable cooperatives has been decreasing, in general, although for the grape cooperatives a large part of the decrease has been due to a declining trend in the total value of the grape crop in this section.

The handling of supplies would help to stabilize the business of associations marketing fruits and vegetables, and would help to carry some of the overhead costs. This is of particular importance in lean years.

In general, cooperatives in New York compare favorably in efficiency with private businesses. They have probably suffered less mortality than have private businesses in the same fields. They have made important contributions to the improvement of New York agriculture through savings to their members, by furnishing to their patrons needed services that were not otherwise available, and by reducing the margins of private dealers.

While in general the cooperatives were efficient and soundly financed, there is no justification for complacent self-satisfaction. Greater efficiency, financial soundness, and service should be striven for.[72]

Iowa

In the 1920's the Iowa State College made studies of farmers' co-operatives and of market prices and price trends.

According to the best information available, cooperative associations for the shipment of livestock had their beginning, so far as Iowa is concerned, in the year 1904. . . . This date is somewhat earlier than that claimed for the birth of the cooperative livestock shipping movement in the adjacent states of Minnesota and Wisconsin. . . .[73]

Early in 1920 the Iowa Agricultural Experiment Station undertook to make a state-wide survey of this cooperative livestock shipping movement for the purpose of learning: (1) the history and growth of the movement, (2) its present magnitude, (3) the future of the organizations and the business methods pursued by them, (4) the achievements in terms of financial saving, more efficient handling, or better market distribution, (5) the difficulties which beset the movement, and (6) the outlook for its future development. It was thought that, after the very rapid growth of the last few years, it might be well to take account of stock and pool common experience for the benefit particularly of those whose success has been least satisfactory, to the end that future efforts may be directed more uniformly along lines of proven safety and success.

Over a period of about ten months, visits were made in person to over three hundred of the associations, and correspondence was carried on with the others so far as they could be located. Both regular and special reports of county agents and extension specialists were gleaned for data, and every other accessible source of information was searched.[74]

The report dealt with size of the business, form of organization, methods of operation, achievements, and difficulties encountered. This done, the authors gave their conclusions derived from the study:

[72] F. A. Harper, "Cooperative Purchasing and Marketing Organizations in New York State," Cornell Agr. Exp. Sta. *Bulletin* 544 (Ithaca, 1932), pp. 91–92, 94.

[73] It appears, however, that in addition to the fact that some five associations in the state of Iowa antedated the organization at Litchfield, Minn., there was also a much earlier movement which resulted in the establishment of a number of associations of substantially the present form in the states of Kansas and Nebraska as a feature of the earlier farmers' organization movement of the 80's, although there are only a few survivors from this group.

[74] E. G. Nourse and C. W. Hammans, "Cooperative Livestock Shipping in Iowa in 1920," Iowa Agr. Exp. Sta. *Bulletin* 200 (Ames, 1921), pp. 403–06.

. . . the work of livestock marketing embraces three tasks or functions as follows:

I. Assembling and loading of carlots of stock at country points.
II. Distribution of these to local and terminal markets.
  a. Physical handling of stock by railroads and stockyard companies.
  b. Commercial problems of choosing date of shipment and market destination.
III. Bargaining and actual sale of stock to users or to traders who ship from primary or terminal markets.

At the present time the local shipping associations are attempting to perform all three of these functions, whereas it is doubtful if in a well designed scheme of organization they could be reasonably expected to do more than the first one economically and efficiently. It seems obvious that a local organiaztion is needed for grouping producers together for the maintenance of a shipping service thru which carlots of stock can be assembled and dispatched to market. The area embraced should be small enough so that there may be easy telephone communication and a helpful personal acquaintance between manager and members, but must not be so narrowly localized that the volume of business is too small for economical business organization.[75]

The authors advocated a state organization to assist the co-operative livestock shipping association, enumerated eight functions of a state association, and concluded:

It is clear that in dealing with large business organizations like the railroads, the stockyards, the packers, or the livestock exchanges, the small local associations can have little influence and cannot afford to undertake any considerable effort. But a state association representing a volume of cooperative shipping business of 50,000 cars today and in due time perhaps twice that amount commands respect and can afford to make the effort necessary to secure the adjustment of all real abuses.

Eventually such an association might decide that it was desirable for it to undertake either or both of the other market functions discussed above (IIa and III). It might take over the task of supervising the equalization of shipments between the different markets and, so far as the nature of the product permits, the equalization of shipments in time. Such a move would be analogous to the service performed by a large federated cooperative association such as the California Fruit Growers' Exchange. Likewise they might attempt to sell their own product either in the central markets or at suitable points within the state. How far such developments could profitably be carried would have to be determined only after the steps have been taken which lead up to that point. We are a long distance from it yet and it is unnecessary now to speculate very much on the remoter problems which cannot be effectively tackled until we have our local associations within the state on a permanent basis of skilled business management under the unifying influence of a well organized state service organization.[76]

The next year a second bulletin on livestock shipping associations gave special attention to the business methods of the associations, with special reference to methods of keeping records of the trans-

[75] Nourse and Hammans, "Livestock Shipping," pp. 432–33.
[76] Nourse and Hammans, "Livestock Shipping," p. 436.

actions.[77] The bulletin contained a practical course in bookkeeping for the managers.

In 1928, D. A. FitzGerald brought up-to-date the information regarding the co-operative livestock marketing associations.[78]

In 1923 attention was turned to the problems of marketing grain.[79] It is noted by E. G. Nourse that Iowa farmers had been struggling with the grain marketing problem for 50 years when the Iowa Agricultural Experiment Station turned attention to the subject and published a report on the efforts farmers had made to solve the problem through co-operation. The author indicated that there were two causes leading to the organization of co-operative grain elevator companies. One reason was the need for an elevator where one did not exist. Another reason was to reduce the charge farmers were paying for local elevator service furnished by a line company or by independent elevator owners. It appears that in the first two decades of the twentieth century the latter was the principal cause:

> . . . we know very definitely that the margins taken at country stations by line and independent houses in the period which gave rise to the present farmers' elevator movement, were much wider than necessary to pay ordinary operating returns. An abundance of trustworthy evidence is available to show that such margins were reduced by the advent of the farmers' elevators and that they are being held down by the continuance of that competition.[80]

The bulletin lays stress upon the importance of good business management:

> The writer believes that no person can make an extended examination of the farmers' elevators of the state of Iowa without coming to the conclusion that the future success of the movement demands imperatively that the business management of at least three-fourths of the elevators of the state be put upon a sounder basis than it is at the present time. If the lower three-fourths could be brought up to the standard of the upper quarter, we should have a farmer grain handling organization about whose future success no fears need be entertained. . . .
>
> The first great achievement of the farmers' elevator movement has been to secure for producers the rather wide margin of profits which formerly went to private interests. Competition now having put the handling charge on a relatively narrow basis, the next objective of a farmer grain handling organization must logically be to enhance the producer's net return by developing a high standard of technical and business efficiency in the operations of all these farmer houses, so that wastes are reduced to a minimum, grain is distributed with maximum skill and intelligence with reference to market needs, and operating costs are reduced to the lowest possible figure.[81]

Nourse summed up his findings:

> The outstanding lessons which seem to the writer to be taught by more than 50 years of history may be briefly summarized as follows:

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[77] F. Robotka, "Accounting Records for Livestock Shipping Associations," Iowa Agr. Exp. Sta. *Bulletin* 209 (Ames, 1922).

[78] D. A. FitzGerald, "Local Cooperative Livestock Marketing Associations in Iowa Since 1920," Iowa Agr. Exp. Sta. *Bulletin* 254 (Ames, 1928).

[79] E. G. Nourse, "Fifty Years of Farmers' Elevators in Iowa," Iowa Agr. Exp. Sta. *Bulletin* 211 (Ames, 1923).

[80] Nourse, "Farmers' Elevators," p. 257.

[81] Nourse, "Farmers' Elevators," pp. 265, 268.

1. The elevator business is a distinct line of commercial activity, which should be organized on a strictly business basis for the mutual benefit of all who are engaged in the grain growing industry. . . .
2. Any cooperative endeavor exists for the mutual benefit of its members and its strength or weakness is measured absolutely by the loyalty of such members. If they do not support their company wholeheartedly with their patronage and take an active interest in its affairs and play a positive part in the running of the company, it will soon find itself in a poor position to compete with the private company whose management is constantly spurred on by the motive of personal profit.
3. Inadequate capital has been one of the most common causes of failure on the part of the farmer companies. Producers cannot expect to get the benefits of cooperative selling unless they are able and willing to provide the necessary machinery. . . .
4. Good business management is an absolutely essential foundation of every prosperous farmers' company. . . .
5. To secure really efficient management at the smaller shipping points and to give the grain industry of the state the influence that it should have in its dealings with the railroads, with terminal marketing agencies and in the purchase of supplies, it is highly important that all the farmers' elevators of the state, which have a mutual interest in these matters, should become part of a strong state organization. This need of a common spokesman for the country grain trade and a source of several important lines of overhead service has been felt since the early days of the second elevator movement, and has made commendable progress in the case of the State Farmer Grain Dealers' Association. . . .
6. In the long run the outstanding benefits of a cooperative marketing organization are to be secured from the introduction of economies and new elements of efficiency into the handling of the given commodity. If producers go into a line of business simply for the sake of getting a handling profit away from the other fellow, the time will soon come when no further benefits of the movement can be shown. But even in so staple a line of business as grain marketing, there is ample opportunity for the introduction of new economy and efficiency. If this field of work is taken up energetically and intelligently, there should open up for the farmers' elevator movement a period no less successful than its past and even more constructive and permanent in its character.[82]

Nourse gave attention in the text, although not in the summary, to the question of orderly marketing:

A great deal has been said in the past few years about the benefits which would accrue to the farmer from orderly marketing of his products. . . . It seems evident on the face of it that no considerable step in the direction of orderly marketing of grain is going to be introduced by 511 farmers' elevators in the state of Iowa or 4,000 such companies in the north central states so long as the individual whim or necessarily very inadequate marketing information of each of these individual managers determines the time at which or the market to which grain shall be moved.

On the other hand, the total grain surplus of the state of Iowa makes up a volume sufficient to be a significant factor in market adjustment and if distributed to the various markets to which we are naturally tributary thru some central administrative agency equipped with the fullest marketing

[82] Nourse, "Farmers' Elevators," pp. 270–71.

information and with a personnel of the most able and experienced grain men, notable results might be secured in avoiding market gluts and in "feeding the market" in a really systematic and intelligent way. This, however, implies the building up of a farmer grain marketing system as extensive as the grain producing industry of the state. It would have to be built from the ground up on the firm foundation of 511 or whatever number there might be of solidly established and efficiently managed local elevators, each responsible for the gathering and shipping of grain economically and efficiently from their local points, but turning over certain parts of the actual distribution work to a specialized service agency set up by themselves, subject to their direction and existing solely for their benefit.[83]

Thus Nourse took his stand with those who believed in building from the ground up and who believed in those benefits which come from competition in the local market. He also believed that benefits would derive from efficient handling and intelligent marketing of the product in the light of full information concerning the supply and demand situation in available markets.

This view is clearly and forcefully brought out in an article in which he stated his conviction that the centralized type of co-operation with emphasis on price fixing was extremely bad:

> . . . in attempting to apply a measure to the achievements of coöperation we must bear clearly in mind the two quite different ideals which have been set up as possible objectives of the movement. . . . these two goals proposed by American coöperators are, on the one hand, centralized market control and, on the other, decentralized business organization for the more efficient standardization, assembly, and market distribution of farm products. . . .
>
> . . . I shall state it as my conviction that the outlook for coöperative marketing after the first of these patterns is extremely bad. Several specific projects of this kind are definitely before us at the present time, aiming to set up a national agency for administering the market supply of a given class of products so as to "control" or "stabilize" the market in the interest of their members. In their first and worst form they proposed to "fix prices" on a cost plus basis through control of seventy-five per cent or some other necessary fraction of the product. Fortunately, they have in general now receded from this position, but still are pinning an enormous and naive faith to promises of vast improvement in prices to be brought about through statistical bureaus of impossible omniscience and through supply manipulation of dubious efficacy and of uncertain physical and financial practicability.
>
> It would be extremely unfortunate if the interest in and enthusiasm for coöperative marketing which is being manifested at the present time were to be largely dissipated in attempts to do the impossible at the terminal market, whilst the necessary work of organizing the producing territory solidly and effectively was neglected. But it appears that just that mistake is being made today by several prominent agencies which have been entrusted with the leadership of the farmers' marketing movement. . . . I can not see in their proposals the reflection of a true understanding of the nature of the price-making process or the character and extent of present defects or abuses in our marketing machinery. On the other hand, there is a dangerous under-emphasis of the great and difficult task of organizing the rank and file of producers so as to carry out comprehensively and effectively such plans of coördination as really are called for. . . .

[83] Nourse, "Farmers' Elevators," pp. 268–69.

The chief weakness in recent large-scale proposals (aside from a faulty price philosophy) has been a failure to judge the size of the business unit necessary for efficiency. Possibly because of their initial impetus in the direction of price-fixing they have been unable to orient themselves to the idea that effective work can be done on less than a national scale.[84]

A few months later, Nourse stated in general terms his views of the significance of the farmers' co-operative marketing undertakings in the United States:

. . . it is proposed to put the individual members of our agricultural industry in an economic position compatible with the demands of modern economic life both as to productive efficiency and as to distributive justice. . . .

Thus, for example, the live-stock grower feels that he must consolidate the selling function to the extent which will put him on a parity in all the great stockyards markets with the consolidated buying power connoted by the existence of the "Big Five" packer. The dairymen likewise first devised the local creamery as an effective means of meeting the competition of the small private creamery characteristic of the time. Today, however, the competition which they must meet is that of the great centralizer creameries, which advertise their product direct to the consumer and carry their selling clear through to the retail grocer. This must be met by a distributing organization of equal scope, which implies federation of the coöperative creameries of a region embracing a whole state or several states or parts of states in a producing section. Such a development puts the solidarity of a group above the selfish interest of the individual and its successful working demands team work and a spirit of self-reliance which expresses the belief of the coöperating group that together they can work out their own salvation in their relations with other groups and interests. The coöperative clings to the belief that these wholesome results can be secured by voluntary and democratic association. . . .

. . . Agricultural coöperation keeps the spur of competitive enterprise and stimulative salesmanship but also puts the actual producer in a position of prompt and sensitive response to the reaction of the consumer public. . . .

. . . Stated in terms of the distributive process, coöperative organization enters a world in which it finds certain profits accumulated (as it thinks, unduly) in the hands of processors and traders. These it distributes to its producing members, along with any further efficiency profits which it can secure by its improvement of business or technical methods. Such accessions to the grower's price have a stimulative effect on production, with a consequent lowering of the consumer's price. . . .

Agricultural coöperation offers to the inherently decentralized industry of agriculture a workable and expansible scheme of organization designed to set up an agency for the progressive study and adjustment of the larger problems which are being forced upon this industry by the inescapable processes of our economic evolution. If, as Mill suggests, the goal which we are seeking is to raise the rank and file of our workers to a position where they are also, in the largest measure possible, owners of that share of the productive capital of society which is employed in their industry, we should look upon agricultural coöperation, conserving as it does (and in time extending) the present highly desirable combination between capitalist and labor rôle of the American farmer, as a movement to be carefully fostered and directed into channels of practical success as well as social helpfulness. Like other evolutionary processes its future course depends largely on the quality of

[84] E. G. Nourse, "The Outlook for Cooperative Marketing," *Journal of Farm Economics*, 4:81–82 (April 1922).

its leadership. To analyze the issues intelligently and helpfully would be a service which the economist might well feel himself called upon to undertake.[85]

Reuben A. Holman was intimately associated with those who made the Rockwell, Iowa, farmers' elevator a success for more than 50 years. He has told an interesting story of the development of the co-operative movement in Iowa[86] and gives information rarely found in a research bulletin. Holman participated in the organization of the Incorporated Cooperative Farmers' Society of Rockwell, Iowa, March 2, 1889. He gave the reasons for organizing:

> Fifty years ago information concerning the markets was not as general, nor as easily available as it is today. This placed the grain buyer continually in a position of the temptation to take advantage of his customers. Many buyers who were unscrupulous, and who had no competition went the limit, not only in the margin of profit taken, but, in the percentage of dockage exacted. It was largely a matter of judgment and conscience as to how much he took. Farmers became suspicious, because they seldom knew just when they were being treated fairly. This feeling sometimes led to what might be termed "scoop-shovel elevators," when the farmers scooped their grain into cars, and consigned it themselves — and often with a profit that revealed their position of disadvantage with the local grain buyer.
>
> Then came the farmers' discovery of a secret understanding among buyers that they would pay a uniform price for each day, thereby eliminating competition. There were instances in which apparently competing elevators covertly pooled their business and divided profits; so it made no difference which one of them took in the grain — first one, then the other, might bid the highest. Disagreement among themselves, however, over such arrangement and division of profits soon revealed their existence to the public.
>
> Accumulated knowledge of such practices determined farmers in the vicinity of Rockwell, Iowa, to start an elevator of their own on a co-operative basis, in order that each member of the organization might know that he was getting the full local value of his produce, minus the handling charge.[87]

Kentucky

O. B. Jesness took charge of the marketing work at the University of Kentucky in 1920. His first bulletin on marketing described the co-operative strawberry marketing associations and emphasized the need of producing fruit of good quality in order to obtain a good price.[88] A map was prepared showing the relative quantities of Kentucky strawberries received by 18 states in 1922. Emphasis was laid on the importance of developing new outlets as production expanded.

What appears to be a case of overproduction may be only an instance of faulty distribution. A highly perishable product such as strawberries must be handled quickly and immediate markets must be found since the berries cannot be held very long. Satisfactory marketing of a product of this kind is

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[85] E. G. Nourse, "The Economic Philosophy of Cooperation," *The American Economic Review*, 12:594–97 (December 1922).

[86] R. A. Holman, *The Romance of the Farmers' Grain Dealers Association of Iowa* (Des Moines: published privately, 1946).

[87] Holman, *Grain Dealers Association*, p. 7.

[88] O. B. Jesness and D. G. Card, "The Marketing of Kentucky Strawberries," Kentucky Agr. Exp. Sta. *Bulletin* 246 (Lexington, 1923).

dependent upon prompt locating of sufficient outlets. Because of this fact, the various associations devote considerable attention to market outlets. The larger volume of shipments resulting from the rapid increase in the strawberry acreage in Kentucky has increased the importance of this work.[89]

The local strawberry marketing associations had operated independently. On the question of setting up a central marketing organization, the authors said:

. . . Some interest has been indicated in Kentucky in the possibilities of forming a central marketing organization made up of the local strawberry marketing associations which have been established. Among the possible services which have been suggested for such a central body has been to concentrate the sale of the berries under one management, the interchange of information regarding production and marketing problems, the development of greater uniformity in grades and the expansion of market outlets. A central organization should be helpful especially in the routing of consigned shipments in such a way as to keep these shipments away from glutted markets as much as possible. The larger organization also should be in a better position to obtain and use market information than are the individual local associations.

The formation of such an association is not entirely free from difficulties. There is need for an appreciation on the part of the various associations and their managers of the importance of giving up some of their freedom of action in return for the greater strength which should come from a well organized and properly directed central body. There must exist a feeling of confidence among the various organizations. A satisfactory division of activities between the locals and the central must be determined upon. Every effort must be made to eliminate jealousies and to prevent the development of any reasons for distrust in the management of the central body. If a central association is formed it should come about as a result of a recognized need. It would be a mistake to organize it unless this need is felt as otherwise it would probably lack the support required for success. . . .

The various strawberry marketing associations have many problems in common and the proposition of establishing a central association to look after such questions, merits careful consideration on the part of the organizations. Among the propositions to which such a central body could give attention are better cultural and handling methods, the interchange of information, the location and development of outlets, the routing of consignments, the supervising of sales and the handling of transportation questions.[90]

Proper attention to methods of preparing the product for the market was stressed:

There is an important relation between methods of production and the results obtained in marketing. The wide distribution and the successful marketing of such products as California oranges, Northwestern apples and Eastern Shore of Virginia potatoes, are dependent to a considerable extent upon careful growing, handling and grading methods. Kentucky strawberry growers should bear this fact in mind because the successful sale of their berries depends not only upon having effective distributing machinery, but also upon the care observed in growing, picking, grading and packing the berries. Educational campaigns probably could be carried on by the marketing associations among their members to emphasize the importance of these matters.[91]

[89] Jesness and Card, "Strawberries," p. 18.
[90] Jesness and Card, "Strawberries," pp. 23, 28.
[91] Jesness and Card, "Strawberries," pp. 26–27.

Several years later another bulletin on strawberry marketing indicated that the Kentucky strawberry crop was marketed "almost wholly thru local co-operative organizations . . . in 1929, the ten associations then operating ranged in volume marketed from 10 to 372 carloads."[92]

Strawberries were sold chiefly F. O. B. shipping point, and on consignment. The method of sale varied considerably between associations. Some associations sold entirely on an F. O. B. basis while other associations used the consignment method only. F. O. B. sales tended to predominate and were preferred by most shippers as prices were thought to be more certain, and payment was quicker when buyers permitted drafts to be drawn against them and assumed the risks of shipment. Buyers generally favored consignment as less risk and lower costs were thereby incurred. It is not surprising, therefore, that the relative importance of these methods of sale varied under different marketing conditions, and that they depended largely upon the relative strength of buyers and sellers and upon market risks. With small supplies of fruit or high average quality, shippers' preference tended to prevail whereas buyers were better able to dictate consignment when fruit is abundant and low grade. . . .

Mingling the strawberries of different members of a co-operative association for sale is a form of insurance in that it eliminates the possibility of some members of an organization obtaining much lower prices than others for products of similar quality sold during the same period. . . .

Car pools, daily pools, and seasonal pools are used by various associations in Kentucky. . . .

. . . In the case of selling, the principal problem is to adopt a plan of settlement that avoids discrimination among members and that is efficient for purposes of administration. The car pool meets neither of these requirements well, first, because the returns received by an individual grower are dependent upon the returns of individual shipments, and, second, because a large amount of clerical work is required in settling with growers. . . .

The seasonal pool eliminates the variation in prices received by growers that results from the variation in daily shipments, like the daily pool; in addition, it eliminates variations in payments due to differences in daily prices received for strawberries, by paying members on the basis of average prices received for berries of similar pack and quality for the entire season.[93]

The authors repeated the suggestion made by Jesness and Card in 1923 that the establishment of a central co-operative organization should be seriously considered:

. . . Thus far relations among the associations of Kentucky have been very informal and their purpose has been almost wholly restricted to the exchange of market information. There are many other problems which cooperatives share mutually. . . .

Among other matters to which such a central body could give attention are better cultural and handling methods, the location and development of market outlets, the handling of claims and other transportation problems, the standardization of packages and grades, the routing of consignments and perhaps the supervision of sales. . . .

Not all cooperatives will find it expedient to join other associations, to relinquish any of their activities or to cooperate in offering new services. . . .

[92] C. D. Phillips and D. G. Card, "Organization and Management Problems of Cooperative Strawberry Marketing Associations in Kentucky," Kentucky Agr. Exp. Sta. *Bulletin* 319 (Lexington, 1931), pp. 251–52.

[93] Phillips and Card, "Problems," pp. 281–85.

Cooperative strawberry marketing associations operate with varying degrees of efficiency. The members of some associations may, therefore, prefer to continue as independent marketing units.[94]

On the functions of the co-operatives, Jesness said:

Because marketing consists of the performance of services, the field of cooperative marketing lies in rendering some of these services and doing so more effectively and economically than does private endeavor. The nature of the services assumed depends upon the organization, the commodity and the market. Quality improvement frequently is a very valuable service of cooperative marketing associations. . . .

Closely linked with the question of quality improvement is the sale on the basis of uniform grades and settlement with members on that basis. . . .

The larger volume of business of an association enables the employment of trained help so that the member is supplied with the services of salesmanship. . . .

The farmer is not always on an equal plane with the buyers of his product in bargaining strength. This is especially true in the case of products having outlets which are concentrated in the hands of relatively few buyers. A cooperative association may aid the farmer in overcoming this handicap so that there may be greater assurance that his products will be paid for in accordance with actual market conditions. . . .

The idea that farmers can fix prices by organizing is popular. In connection with the membership survey . . . the members interviewed were asked if they thought cooperatives would be able to fix prices. Of the 398 members who gave their opinion on this point, 139 replied in the affirmative, while 127 others gave an affirmative answer with the qualification that a sufficient percentage of control must be obtained before this is possible. Thus 266 of the 398 indicated a belief in price control. A negative answer was given by 105 members. Of the other answers, 14 were doubtful, 10 indicated the conclusion that cooperatives had fixed prices and 3 that they could do so to some extent.

The limitations of a local cooperative association in fixing prices are well understood. Its influence on prices depends upon its ability to improve grade and quality, to find better outlets and to reduce the spread between the producer and consumer by more efficient operation or by narrowing dealers' margins thru competition. The limitations of the larger organizations have not been understood as fully. Large-scale organization among farmers has received considerable impetus from the belief that this would enable farmers to fix their selling prices. It is often said that "everyone except the farmer fixes the prices on his products." Frequently it is concluded that farmers do not fix their selling prices because they have not organized sufficiently. This line of reasoning has played such a prominent part in organizing tobacco growers and other farmers for marketing purposes that a careful examination of it is worth while.

If the phrase, "fixing of prices," is meant to convey the idea of arbitrary control of prices, it does not take long to discover that everyone does not fix his prices. A manufacturer or dealer may mark the selling price on the tag but that does not mean that he will receive that price. Usually the price he can obtain is fixed for him mainly by forces beyond his control. Factors of supply and demand influence prices of all products and consequently cannot be disregarded by any line of industry. Concerns which have monopoly control can adjust supply so that the most profitable prices will be obtained, but instances of real monopoly are not nearly as common

[94] Phillips and Card, "Problems," p. 286.

as it is popularly believed. Most business concerns are faced with competition from other concerns in the same line as well as from other products of a competitive nature.

There is a great deal of misconception regarding the relation of cost of production to market price. It is a popular belief that prices for farm products can be based directly upon cost of production. For instance, one of the questions asked members of tobacco and cotton associations sought information as to whether cooperatives should be able to get prices based on cost of production. Out of 381 replies, 268 were in the affirmative, 96 were negative and 17 doubtful. Thus, fully 70 per cent of those who expressed an opinion, indicated that they regarded production costs as a proper basis for prices.

What are the difficulties in the way of basing prices on production costs? They fall into two groups: One relating to the determination and selection of costs, and the other relating to keeping market prices in definite relationship to costs. The determination of the exact cost of producing a specific farm product, even on a single farm, is difficult. Most farmers produce a variety of products, making it hard to determine the exact proportion of certain costs which is chargeable to certain crops. Even if costs on individual farms can be arrived at with a fair degree of accuracy, the costs for different farms vary widely. Whose cost is to be used as a basis for prices? If the average cost is used, one-half will be produced at a higher cost. The highest cost usually is an extreme one and would result in an unreasonably high price. A cost somewhere between might be selected, but the proper cost cannot be determined arbitrarily.

After a cost has been decided upon the problem of obtaining a price in line with that cost still remains. What if the resulting price is so high that some of the product remains unsold? What if it is so high that production is expanded to a point where there is an excess above market needs? Cost of production is not without effect but it is not the only factor affecting price. As a matter of fact the effect of cost upon price is made known thru its effect on supply. If the price of a product drops to a point where the cost of production of some of the producers is not covered or where some producers will find it more profitable to substitute other products, the future supply will be lowered. On the other hand, if the price is too high, production will be stimulated and the future supply increased. In the long run, the price paid the farmer for a product will have to average high enough to cover the cost of production of the supply which the market requires. At any particular time, however, there may be a considerable difference between the cost of production and the market price, because other factors than long-time supply influence prices. . . .

Some who readily admit that supply and demand conditions are important in price determination suggest that manufacturers avoid unprofitable prices by curtailing production whenever an oversupply is threatened. While there are many exceptions, there is considerable merit to this contention. . . .

. . . The farmer determines the acreage to be devoted to a certain crop but production may vary widely from year to year on a given acreage. Temperature, rainfall, insect and disease pests influence agricultural production materially. The factory has more control over the conditions surrounding production than has agriculture. The farmer's business is a long-time proposition. If he has spent years in building up a herd or an orchard, he can not afford to break up the herd or cut down the orchard in order to curtail production because of a temporary oversupply. He can not rearrange his system of farming without serious disturbances to rotations and cropping plans. There is no stopping in mid-season after a crop is in the ground, even if an oversupply may be threatened. The owner of a flock

of sheep must let the flock keep on growing wool even if the market outlook may be poor. He can not have it stop producing for a month, or two, or three, and then start up again when conditions are favorable. A woolen mill unable to sell its goods will soon have to shut down or curtail operations until market conditions improve. The average manufacturer can not continue to operate very long at a price that is lower than his cost of production. He hires his labor and has a payroll to meet. On many farms, all or most of the work is done by the farmer and his family and the farm may continue to be operated in times when prices are such that there is little or no return for the labor involved. Readjustments thus may be forced more quickly in manufacturing than in farming. These are due to the nature of different lines of work and not merely to the extent to which industries are organized.

Organized production in other lines, however, is an aid to the making of adjustments. There are fewer individuals involved in arriving at decisions. The large volume of business also makes it possible to study the future closely as a basis for present operations. But let us not forget that this is largely a benefit of organized production, not of organized selling. Cooperative marketing does not equip the farmer to do the same because it is not organized production, it is organized selling. The marketing organization necessarily leaves control of production with the individual grower. In the case of temporary oversupply of a non-perishable product, a marketing association may render valuable service by adjusting the time of sale accordingly. But the individual member should appreciate that the problem of adjusting production to market requirements belongs to him and his fellow farmers, not to his marketing organization. The latter can help him by supplying information on the future outlook, but this is effective only when the farmers translate this information into action on their individual farms.[95]

Jesness' analysis of the subject of price control has been presented rather fully for several reasons. It is a clear-cut statement. It was made at a time when few agricultural economists found themselves in a position to publish in an experiment station bulletin a statement so far out of line with the popular opinion built up by the propaganda of the professional organizers of centralized selling agencies organized under the laws providing for farmers' co-operative associations. Jesness had the courage to say what he thought. The President of the University of Kentucky, Frank L. McVey, was an economist, and the Director of the Agricultural Experiment Station, Thomas P. Cooper, was an agricultural economist. We have found no comparable statement in that period in an experiment station bulletin, or in a bulletin of the U. S. Department of Agriculture. Furthermore, the analysis which Jesness made, while ignored by President Hoover in creating the Federal Farm Board in 1929, was soon recognized by Alexander Legge when he undertook to carry forward the work of price control by market operations through the co-operative associations.

Jesness could speak boldly on the limitations of co-operatives in the field of price control because he was known to be an advocate of the co-operative principle and its practice for such purposes and to

[95] O. B. Jesness, "Cooperative Marketing and Price Control," Kentucky Agr. Exp. Sta. *Bulletin* 271 (Lexington, 1926), pp. 264–71.

such ends as co-operation can be made effective. Jesness had grown up in the atmosphere of the co-operative movement in Minnesota. He was educated at the University of Minnesota where co-operation was the central theme of the agricultural economists, had spent five years in the U. S. Department of Agriculture as specialist in co-operative organization, and in 1923 had published a book on co-operative marketing of farm products.[96] That book gave evidence of his sympathetic understanding of the co-operative movement and his belief in it for all the purposes for which it gave promise of success.

Jesness continued to promote thinking and research on co-operative marketing.[97] He enumerated the reasons for organized selling of tobacco:

> . . . Tobacco is an intensive crop, produced in comparatively localized regions. This makes it possible to organize a considerable proportion of the growers of a given type into an association without having to include a wide area. The localized production and the fact that it is an intensive and an important cash crop, result in considerable responsiveness of tobacco production to changes in tobacco prices. Tobacco is a non-perishable which not only may be carried over from season to season, but actually is carried over as part of the curing and aging process. The outlets for tobacco are concentrated in the hands of a limited number of buyers. There are no highly-organized, central markets, corresponding to those found for grain and cotton where large numbers of buyers and sellers are represented and where opportunity is offered for an interplay of the forces of supply and demand in arriving at prices. The tobacco farmer has no such market to which he can turn for quotations by grade.[98] While the commodities themselves differ very widely, there is some resemblance between the markets for tobacco and milk in that in both cases there is concentration of outlets and lack of adequate price quotations.
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> It is under circumstances such as these that tobacco growers have turned to organized selling. . . .
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> Tobacco growers in Kentucky and adjoining states have organized for selling at different times. The more outstanding of these movements have been those which were organized during the early part of the present century and those which came into existence during the period following the World War [I]. . . .
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> One outstanding feature of these organizations was the emphasis which they placed upon price control, and even direct fixing of prices by agreement. . . .
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> The difficulties of this scheme of raising prices soon became apparent. Many growers were not equipped to store their tobacco nor to finance the holding process. Not all the growers were in accord with the idea, and selling on the part of some naturally weakened the determination of others to hold for the higher prices. It was not long therefore before a demand arose for the perfection of organizations which would take charge of the receiving, pricing, storing and selling of tobacco. Such organizations were started in West Kentucky and later in the burley district. The organization of the

[96] O. B. Jesness, *The Cooperative Marketing of Farm Products* (Philadelphia: J. B. Lippincott Company, [1923]).

[97] O. B. Jesness, "The Cooperative Marketing of Tobacco," Kentucky Agr. Exp. Sta. *Bulletin* 288 (Lexington, 1928).

[98] There are markets which are quoted by grade, but neither the markets nor the grades have the significance of such a market as the Chicago grain market.

Burley Tobacco Society was started late in 1906, the members pledging themselves to pool their 1906 crop with the organization. That the fixing of the selling price was prominent in the minds of the organizers is shown by a provision in the contract which stipulated that an average crop should not be sold for less than fifteen cents a pound.[99]

After a brief sketch of the earlier development, Jesness gave special attention to the development of the tobacco co-operative from 1921 to 1927:

. . . The Dark Association felt it advisable practically to release its members from their obligation to deliver their 1925 crops and was unable to secure sufficient support to renew the contracts which expired with the 1926 crop. While the Burley Association operated during the life of its contract, it, likewise, failed in its attempt to secure a re-sign-up in 1927. . . .

The non-perishability of tobacco and the custom of carrying over large supplies from year to year affect cooperative marketing. Tobacco not only may be, but actually is, held for considerable periods before manufacture. An association, unless it is merely a sales agency, must be prepared to render some of this carrying service. The exercise of bargaining power is dependent upon control over the time of sale. This may involve considerable delay in selling and consequently delay in making settlement with the growers. Delayed settlements have been one of the most outstanding sources of dissatisfaction among members. . . .

Among the most outstanding and most difficult problems with which tobacco cooperatives have had to deal are those arising out of membership relations and attitudes. . . .[100]

The managements of these movements were confronted with technical and commercial problems involved in the handling and sale of tobacco. Men were selected because of their knowledge and experience in grading, warehousing, financing, accounting and selling. Few of them had had experience in dealing with large masses of members in a cooperative. . . .

Some of the problems arising out of membership relations were due to misconceptions on the part of the members of the real nature of cooperative tobacco marketing. Some arose from a lack of adequate contact between member and management. Some arose from a lack of confidence of members in the management. Unquestionably, too much faith was placed in monopoly control at the outset. Many believed that the sign-up of a considerable proportion of the crop meant supply control and that this could be used to hold prices at certain levels. . . .

The two criticisms which appeared to be made the most frequently were that it took so long for sales to be completed and for final payment to be made, and that outsiders tended to get the benefits without sharing in the burdens. Several months are required for the growing of a crop, and during this time the grower must finance his operations. If he then receives only part payment at the time of delivery and has to wait months, or even years, for final settlement, it is a question of no little significance, particularly for those who are hard pressed financially. . . .

The criticism that non-members received benefits without bearing their share of the burden has a foundation in fact. . . .

The tobacco cooperatives naturally have had a close relation to prices. The main argument for their formation was the need for combatting low prices. . . .

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[99] Jesness, "Tobacco," pp. 273–77.

[100] For the results of a study of membership problems of tobacco associations, see: J. W. Jones and O. B. Jesness, "Membership Relations of Cooperative Associations," U.S.D.A., *Department Circular* 407 (Washington, 1927).

Have these developments demonstrated that cooperative tobacco marketing has no future? . . . It is reasonable to expect that renewed efforts at cooperative selling of tobacco will be made. Considerable experience now has been gained, and this should be helpful in placing future enterprises on a better foundation.

The nature of the tobacco market is such that bargaining for prices likely will play a prominent part in the activities of future organizations as it has in the past. However, it is apparent that permanent service in this field will have to be based on cold analysis of what conditions justify, rather than on the basis of desire. The price which an organization can get in the long run can not be so high as to stimulate overproduction. An organization may be helpful in lessening fluctuations from year to year and thereby may put the industry on a more stable and profitable basis. It can not achieve permanent success by arbitrary price fixing.

It is probable that less emphasis will be placed on price control and more on specific services in the future. An effective organization can sell tobacco on the basis of grade, a service of value to the growers. It can study market conditions so as to get a price in line with those conditions. It can bring to the growers information which will guide them in planning their production programs. It can provide uniform treatment for all the members, eliminating special treatment to some at the expense of others. It can aid in building up added outlets for the type of leaf grown by its members. It can represent the members' interests and viewpoint in connection with legislative programs.

Wherever cooperative marketing has achieved long-time success it has been on the basis of performing concrete services such as the above for its members, not by price fixing. . . .

Tobacco growers in Kentucky should study the marketing question. They should study particularly the plans and problems of tobacco cooperatives in order that future efforts may be of a more permanent character than those of the past.[101]

Thus, in friendly terms, Jesness described the tobacco marketing fiasco of the 1920's without mentioning the name of the outstanding promoter of that day who reaped large financial rewards by his clever propaganda that went so far in building large memberships by promising the improbable.

California

The farmers of California had long been interested in the development of marketing institutions and services because of the problems arising out of their great distance from the eastern markets.[102] As early as July 7, 1869, the California Fruit Growers' and Dealers' Association was organized,[103] and expended its first effort in securing a reduction in freight rates. The story of California's many co-operative undertakings relates almost wholly to the thought and action of men of affairs who had ideas that they endeavored to effectuate. Through trial and error in efforts at joint action, they found ways

[101] Jesness, "Tobacco," pp. 292–93, 297–99, 302, 304–06.

[102] Southern States Association of Markets, *Proceedings*, 1914, in Texas Department of Agriculture, *Bulletin* 36 (Austin, March–April, 1914), pp. 43–44.

[103] E. Kraemer and H. E. Erdman, "History of Cooperation in the Marketing of California Fresh Deciduous Fruits," California Agr. Exp. Sta. *Bulletin* 557 (Berkeley, 1933), p. 6.

to expand their markets and to put products of improved quality into distant markets in an orderly manner.

Edward F. Adams, of California, was an early leader in agricultural economics thinking. As a farmer, businessman, and newspaper editorial writer, he displayed great energy, breadth of interest, and public spirit. He was the founder of the Commonwealth Club of California. His book on the business relations of the farmer[104] dealt with many economic problems of farmers, such as buying and selling, transportation, credit, and taxation. Farmer education was emphasized by Adams, but his treatment of the economic aspects of farm management was confined to the outside influences which farmers must have in mind in planning farming operations. Farm management, having to do with internal organization and operation of the farm, was not dealt with by Adams. Since farm organization and operation, with attention focused upon the farm as such, dominated agricultural economics in the agricultural colleges in the early part of the twentieth century, Adams' book was not a factor in that development. Co-operative marketing, which drew the attention of the colleges in the second and third decades, could have found guidance from Adams' chapters on that subject. Adams saw the need of the co-operative movement. He pointed out phases of the buying and selling function that he believed could be handled profitably by co-operatives, particularly if the producer was remote from the market. He also stated the qualifications of co-operators and of managers of co-operative societies that he believed essential to the success of such an undertaking.

Frank Adams, a son of Edward F. Adams, has said:

> Father was closely in touch with David Lubin, and much interested in the International Institute of Agriculture. In 1893 father told me that the California fruit market group needed to have complete world information about competitive fruits, production, prices, and marketing. I do not know whether or not this idea of father's antedates Lubin's idea of an International Institute of Agriculture.[105]

Writing in 1913 of co-operation in the handling, distribution, and sale of fruit, G. Harold Powell said:

> There is a vital power behind the Western fruit-growers' associations that is to be found in no other coöperative movement in the United States, possibly because they have the greatest difficulties to overcome. The class that most nearly approaches the fruit-grower is the grain-grower of the Central West, who was forced to organize the farmers' elevators for protection against a predatory grain-marketing system. . . . The fruit-growers' associations have been formed in order that the capital invested in the industry might be protected. The growers could not consign their products to commission merchants two thousand miles or more away; they could not depend on local or distant buyers to pay a fair price for the fruit; as

[104] E. F. Adams, *The Modern Farmer in His Business Relations* (San Francisco: N. J. Stone Company, 1899).

[105] Personal interview by Anne Dewees (February 1941).

individuals they could not deal effectively with the railroads or with the courts. They had to organize as a matter of necessity. In no other way could their industries be developed.

The cost of distribution of the fruit crop of the United States from the producer to the consumer usually equals about one-half of the price which the consumer pays for the product. The distribution costs include the freight, the different selling charges of the brokers, jobbers, commission merchants, and retail dealers, and the various local distributing charges. . . . The conviction has been growing that the system of distributing farm products has become so complicated and cumbersome as to form one of the leading factors in the increase in the cost of living and in reducing the profits of the producer below that which his capital and labor warrant. . . .

The California Fruit-growers' Exchange is an organization which acts as a clearing house in providing the facilities through which sixty-five hundred growers distribute and market their fruit. The exchange system is built on three foundation stones: the local associations of growers, through which the fruit is prepared for market; the district exchanges into which the associations of a community are federated and which act as clearing houses for the local associations; and the central exchange, which provides agents through which the district exchanges in coöperation with the associations distribute and market the fruit for the growers. The local associations, the district exchanges, and the California Fruit-growers' Exchange are organized and managed by the growers on a non-profit coöperative basis, each of them operating at cost, and each distributing the entire net proceeds to the growers after operating expenses are deducted. . . .

There is a tendency in farmers' coöperative associations to fix the price at which the entire crop shall be sold, or the price for a period in advance, or for the different grades of produce. They are induced sometimes to regulate the output, divide the territory, and to follow other practices that restrict competition and regulate prices. These practices or any others that tend to regulate the price or to restrain or regulate trade conditions are likely to bring an association in conflict with the state and federal statutes that have been enacted to prevent combinations of any kind that act unreasonably in the regulation of prices or in restraint of trade. . . .

. . . The system which has been adopted by the citrus-fruit growers has brought about economies in the purchase of supplies, in preparing the product for shipment, and in the cost of selling the fruit; it has secured lower freight rates, reduced the losses from bad debts; it has standardized the physical handling of the fruit, the grading and the packing, and has thereby given the consumer a better product; it creates a demand for oranges and lemons by advertising, and it distributes the product uniformly to the wholesale trade throughout the year and throughout the country. This uniformity in distribution has increased the demand for citrus fruits and has resulted in a lower retail price to the consumer and gives a larger proportion of the retail price to the producer.[106]

When Thomas F. Hunt became Dean of Agriculture at the University of California in 1912 he commenced readjusting his economic thinking to California conditions, and because of the great importance of co-operation in marketing and in irrigation projects, he decided to develop a Department of Rural Institutions. That is why he called Elwood Mead in 1915 to head up the economic work. On this point Frank Adams said:

[106] G. H. Powell, *Cooperation in Agriculture* (New York: The Macmillan Company, 1913), pp. 197–98, 241–42, 246, 247.

While T. F. Hunt and I were waiting for the train at Ogden, after our trip together to Utah, Hunt said to me: "What would you think of Dr. Elwood Mead as Professor of Rural Institutions at California?" I am sure that the title "Rural Institutions" was his own. He definitely did not want to organize the conventional agricultural economics or farm management work. He wanted something to bridge the gap between the farmer and the phases of the work of the Department of Agriculture that had economic implications. I think the word "institutions" indicated his feeling. He had in mind, I believe, in that term co-operative marketing, co-operative buying, community development, and community organization.[107]

Mead employed H. E. Erdman to study marketing problems.

Co-operative marketing as a means of raising prices to producers was advocated in California at an early date. A study that dealt with the history of co-operation in California,[108] while relating specifically to fresh deciduous fruits, throws light on the whole marketing problem in that state. The authors' summary is worthy of quotation:

> Cooperative marketing in the California fresh-deciduous-fruit industry has been in process of development for sixty-odd years. During this period it has gradually gained in importance. Today, approximately 8,000 growers are organized in some 90 local cooperative associations which handle about 30 per cent of the fresh deciduous-tree fruits and about 11 per cent of the fresh grapes shipped from California, as well as some portion of such commodities sold in the state itself. Most of these organizations are federated into a general sales organization, the California Fruit Exchange . . . [organized in] 1901, as the California Fresh Fruit Exchange. . . .
>
> After many difficulties, particularly in the early years, the Exchange has become a very important factor in marketing California deciduous fruit. In 1931 it marketed 22.7 per cent of the fresh deciduous-tree fruits and 9.7 per cent of the fresh grapes shipped out of the state. Its superior fruit is sold under the Blue Anchor brand, which has gained a high reputation in the United States and abroad. The Exchange furnishes most of the supplies needed by its affiliated local associations. Furthermore, it performs valuable services in matters of standardization, advertising, transportation, insurance, and public relations. It coordinates the activities of the large majority of the existing local cooperative associations for fresh deciduous fruits and has spread its grower connections over the entire state and into Arizona. Last but not least, in collaboration with the California Fruit Growers' Exchange (formerly the Southern California Fruit Exchange), the organization has built up an effective sales system and has made good progress in the development of an export business. . . .
>
> The basic reason for the urge to form cooperative associations throughout the period of sixty-odd years has been low prices to growers. The reasons given in explanation of low prices have been substantially similar throughout the period with some variations in emphasis. The principal reasons were: (1) High freight and refrigeration charges. Practically every organization discussed has at some time or other participated in attempts to reduce these charges or to improve the services without increasing charges. At one time there was even a strenuous effort to form an organization of growers to develop its own refrigerator car line. (2) High charges by California

[107] Personal interview by Anne Dewees (February 1941).

[108] E. Kraemer and H. E. Erdman, "History of Cooperation in the Marketing of California Fresh Deciduous Fruits," California Agr. Exp. Sta. *Bulletin* 557 (Berkeley, 1933).

packers and shippers and by dealers in the East. (3) Dishonest or questionable practices on the part of shippers or on the part of the trade in eastern markets. (4) Lack of aggressiveness on the part of private shippers in developing new markets and correcting evils in transportation or in the eastern markets. Much was said of wide dealers' margins in the East. (5) Disorganization of markets. Most commonly the complaint has been that individual markets are alternately oversupplied or undersupplied. Sometimes, in addition, the total supply to all markets was considered too great.

The basic reason for low prices seems to have been the pressure of supplies on demand. Consumers' habits change slowly. Plantings were increasing rapidly, particularly after every reasonably prosperous or promising period. Thus from 1871 to the bumper crop year of 1876 shipments increased from 916 tons to 2,101 tons, or 129 per cent. Again, from 1876 to 1881 they increased from 2,101 tons to 3,614 tons, or 72 per cent. And to take a more recent period, from 1920 to 1925 shipments of apricots, cherries, peaches, pears, and plums increased from 10,709 cars to 15,201, an increase of about 42 per cent.

As a result, even a year of normal yield was at most times a year when each local newspaper editor or Chamber of Commerce enthusiast could boast "the biggest shipment of fruit in the history of our fair city." Every year of good crops was a year of surplus, a year when there was much complaint of "red ink" — that is, when returns in the East were so low that growers had to raise additional funds to pay freight and refrigeration.

Throughout the history of cooperative marketing of fresh deciduous fruits the same names reappear again and again in a series of movements — the cooperatively minded. Time and again is voiced the complaint that many producers will not cooperate, or that they prefer to listen to and deal with private firms rather than the cooperative leaders and their organizations. The notion has been widespread, even among many of the noncooperators, that substantial grower control on an industry basis is not only desirable but even necessary. Yet, [essentially] as one speaker put it, "you can get one-third of the growers together in an organization; these can get another third to join; but no power outside the Almighty can draw the other one-third in."[109]

Because the growth of cooperative activities was not sufficiently rapid to give the degree of control desired by those who emphasized disorderly marketing, there have been repeated attempts to combine grower and dealer interests so as to include in the organization practically all of the fruit. The California Fruit Growers' and Dealers' Association of 1869, the California Fruit Union of 1885–1894, and the California Fruit Growers' and Shippers' Association of 1894 to 1901, were the forerunners of a whole group of such organizations, attempted or realized during the past decade and a half. Some of these involved the establishment of clearing houses which merely supplied information; sometimes the clearing houses were also to have regulatory powers; and in a few cases the organizations were really joint selling organizations.

General-purpose farm organizations have played an important part in the cooperative marketing movement. The farmers' clubs of the early seventies, the grange during the late seventies and early eighties, the Farmers' Alliance in the early nineties, the Farmers' Educational and Cooperative Union in the first decade of the present century, and the Farm Bureau since about 1920 have all favored, encouraged, and even promoted cooperative marketing in various lines.

[109] A Mr. Gordon at the Thirtieth Fruit Growers' Convention, December, 1904. California State Commissioner of Horticulture, *First Biennial Report,* 1903–04 (Sacramento, 1905), pp. 311–12.

The sum total of discussion of cooperation in the meetings of these organizations, and during the various cooperative movements, has brought up and examined almost every sort of cooperative notion. This discussion has been crystallized into a fairly clear understanding of cooperative practices and problems on the part of a considerable group of growers in practically every locality. This understanding promises continued progress in the development of the marketing system for fresh deciduous fruits.[110]

The California Agricultural Experiment Station was somewhat slow in participating in the study of marketing problems of that state. The first circular on co-operation issued by the Station was prepared by G. Harold Powell, General Manager of the California Fruit Growers' Exchange. It was published in 1914 and revised and enlarged in 1920. The content of the bulletin was based on practical experience and was intended to give guidance to the co-operative movement. Developing this idea, Powell said:

A co-operative organization, if it is to be permanently successful, must grow out of economic necessity and must crystallize around a specific economic question. The reason for its existence must lie in some vital service which it is able to perform if it is to have strength enough to live in the face of the competition to which it will be instantly subjected. It will have to compete with existing organizations and this competition will be directed toward its elimination. It will be vigorously attacked and every conceivable form of misrepresentation will be leveled against it, and every weapon known to competition, fair or unfair, will be used to put it out of existence.

The average farmer is not a business man nor is he skilled in the arts of competitive business. He is naturally a strong individualist, trained for generations to depend upon his own efforts, conservative, slow to delegate authority over his affairs to any one, and reluctant to yield any part of his individual freedom by limiting his own action or by conforming to that of his neighbors. . . . Unless the producer has an abiding conviction that his present individual methods are ineffective and that he must act co-operatively with his neighbors, his organization, no matter how sound or perfectly drawn in form, will lack that cohesion which gives an enduring spirit to co-operation. The co-operative spirit must grow slowly. It is, in fact, a point of view, and the farmer acquires it as a permanent conviction only when it comes to him, step by step, out of the abundance of his own experience.[111]

With regard to the form of organization, Powell said:

A large co-operative movement should be founded on independent local units which, for greater business efficiency, federate and form an agency through which they handle their common problems. This means that each unit builds a packing house or provides other facilities, employs a manager, installs the necessary equipment—the growers themselves thereby owning and directing their local units. The central agency is the co-operative whole and represents the personnel of the combined societies in their business and public relationships, but it must never be lost sight of that the central body must be representative of active, independent units, rather than an organization which owns and controls them. This is the true democratic principle as opposed to the autocratic system of organization and it is just as true here as in any other form of co-operative government that the in-

[110] Kraemer and Erdman, "History of Cooperation," pp. 117–20.

[111] G. H. Powell, "Fundamental Principles of Cooperation in Agriculture," California Agr. Exp. Sta. *Circular* 222 (Berkeley, 1920), pp. 7–8. Appeared first as Station *Circular* 123, in 1914.

dividual unit must be the foundation. Any attempt to put the ownership of local plants or the direction of local affairs under the immediate administration of the central agency is a removal from co-operative principles to the old form of centralized corporate ownership and management.[112]

Powell stressed the vital importance of correct public relations:

The future of co-operation rests not only upon the ability with which growers handle their business problems, but upon how well they meet the present, vital questions which are leading to world-wide social and economic unrest. A co-operative organization can not live for itself alone. It must scrupulously fulfill its public or social relationship as well as its relationship to its own members.

A co-operative organization of fruit growers, for example, should be an important factor in reducing the cost of living, as well as in insuring the growers a fair price for their fruit, if it is to play a vital part in future social and economic life. The producer is entitled to a fair return on the cost of production, if the law of supply and demand warrants it, but he is not privileged, through the power of organization, to impose a higher price on the consumer than the law of supply and demand justifies. . . .

. . . Unless a producers' organization confers a benefit on the public at large, as well as upon the industry which it represents, its future as a vital part of the social and industrial fabric of the country is problematical. Its willingness and success in meeting such tests, as well as its ability to serve its members, will determine how large a part co-operation will play in the future growth of American agriculture.[113]

Henry E. Erdman, who had studied marketing problems in Wisconsin and in Ohio, was appointed Associate Professor in the Division of Rural Institutions at the University of California in 1922. It has been stated that his "appointment was made largely because of his interest in co-operative marketing."[114] Erdman described the beginnings of his marketing studies in California:

When I arrived I found a great deal of interest in certain sectors of agriculture in what the large scale commodity organizations had accomplished in the case of citrus, raisins, prunes, and apricots, in particular. Certain groups were especially interested in the possibilities of developing large scale organizations for the marketing of vegetables, grain, and livestock.

The fruit and vegetable group, particularly those within the California Farm Bureau Federation, were especially interested in the Federated Fruit and Vegetable Growers. The tone of the discussions was that this organization would "eliminate the middleman" and might also, if it became strong enough, do something to control prices.

For several years I was the only one on our staff interested in marketing and when not engaged in teaching tried to determine the nature of the trade channels followed by such organizations as the California Fruit Growers' Exchange and its competitors. Early in 1923 I developed a trade channels chart similar to that published in "Citrus Leaves" of February, 1925, page 1, and later in "American Produce Markets," page 103. I felt that information of this sort would tend to correct some of the overexpectations of great results from such organizations as the Federated Fruit and Vegetable Growers

[112] Powell, "Fundamental Principles," pp. 14–15.
[113] Powell, "Fundamental Principles," pp. 22–24.
[114] Memorandum from Frank Adams to Anne Dewees, Feb. 18, 1941.

and indicate why such a successful organization as the California Fruit Growers' Exchange had not seen fit to go beyond sale to the jobbing trades.

In the fall of 1924 I prepared a manuscript on "Possibilities and Limitations of Cooperation" which appeared in the *Annals* of the American Academy of Political and Social Science, January, 1925. . . .

. . . I had come to feel that farmers were critical of our marketing system and even more in some cases of their own cooperatives on grounds which would be corrected by work on "outlook" rather than work on form of organization among farmers. I felt furthermore that along this same line work on price analysis . . . was badly needed.

. . . it seemed to me by 1926 and 1927 particularly that farmers were blaming their marketing organizations for permitting surpluses to occur which in reality were largely the result of failure to adjust farming in harmony with the outlook and that the then current cost-of-production approach to farm management was not as helpful as the newer budget approach.[115]

Erdman's article in the *Annals* was amplified and republished by the California Agricultural Experiment Station.[116] In that circular Erdman said:

Many persons, when considering the possibilities of coöperative marketing, are inclined to think in glittering generalities of things a long way off—"elimination of middlemen," "price fixing," "orderly marketing," etc. — little realizing that some of the most likely fields for fruitful activity on the part of their marketing organizations are close at hand.

Among those closest at hand are the possibilities arising from standardization of varieties and from improvement in production.

Members of a coöperative association often resent having the management discuss production. The management, in their opinion, has been hired to sell. It must be remembered, however, that the management is in a position to know what varieties and qualities the market demands and it should be expected to point out the facts to the membership. The sale of radio outfits has curtailed the sale of phonographs; now the phonograph manufacturers are making radio outfits. *Agricultural production must likewise be made to meet demand, and the larger coöperative associations are in a position to suggest suitable changes.* . . .

Coöperative organizations can do much to bring about standardization . . . by discouraging the production of the less desirable and by bringing about the general adoption of a few of the best breeds and varieties.

Again, coöperative organizations can bring about improvement in production and particularly can promote the adoption of those practices which tend to make for standard quality of product in the community. The general adoption of what have been shown to be the best methods of spraying and pruning orchards, for example, should make for uniformity of color and appearance in the fruit. Already in certain sections of California the spraying and pruning of citrus fruits is done by the coöperative packing associations, largely, it is true, on account of the greater efficiency thus obtained, but also because of the greater uniformity of the product. For similar reasons many of these associations have also undertaken the coöperative picking of the fruit.

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[115] Letter of April 5, 1948, from H. E. Erdman to H. C. Taylor.

[116] H. E. Erdman, "Possibilities and Limitations of Cooperative Marketing," California Agr. Exp. Sta. *Circular* 298 (Berkeley, 1925). This circular is a revision of an article of the same title published in the *Annals* of the American Academy of Political and Social Science 117:217–26 (January 1925). Additional material has been added.

Local coöperative creameries have had a difficult problem in meeting the competition of the large centralized creameries. Very often their product has scored higher, but because the quality varied from time to time they could not obtain as good a price as that obtained by the large concerns for a highly standardized but lower scoring product. Recently certain groups of these creameries have come to recognize the advantages of having standardized products and have employed field men to work with the local butter makers in order to bring about uniformity. *In many instances the financial gains from such an improvement are greater than any possible saving in costs of marketing.* . . .

What has been said of grading may also be said of packing. Improved and standardized packaging is particularly important because of the fact that sale in the wholesale and jobbing markets is so frequently made by the package. . . .

Improving and standardizing grade and pack should make marketing more efficient by (*a*) raising the level of quality of the product, (*b*) improving its carrying quality, and (*c*) permitting readier agreement between buyer and seller.

Stabilizing production in agriculture is most difficult because, first, the biggest single factor in determining production in any one year is the uncontrollable element of weather, and second, because the decision as to how much to plant or how intensively to operate rests with so many different individuals, each acting independently.

Controlled production is therefore impossible. Urging a decrease in production does not work. This has actually been tried by the wheat growers of the Dakotas, the cotton growers of the South, and the tobacco growers of Kentucky. In nearly every instance where such a campaign for decreased production has been conducted *there has actually been an increase.* . . .

There are, however, periods of over-production and under-production which lead first to low prices and then to high prices. Under ordinary conditions growers of apples, lemons, or grapes continue to plant so long as prices are high, in spite of the fact that immense acreages have already been planted but have not yet come into bearing.

It is in this sense that stabilized production is needed. If some of the over-planting can be prevented that very fact will help prevent depressions which so often follow. Strong coöperative associations can do much along this line if they will keep their members and others thoroughly informed as to the prospects of over-planting or under-planting.

Governmental agencies are already publishing many of the facts, but these facts either do not reach the producers at all or they are not properly interpreted. Coöperative organizations can therefore do three things: They can help make crop information more accurate; then they can do even more to disseminate the facts; and they can do still more to bring about intelligent action on the basis of the established facts, not only on the part of their members but on the part of outsiders as well. . . .

The control of rate of flow to market — often spoken of as "orderly marketing" — has many possibilities for coöperative action. It has, however, been over-emphasized and misinterpreted.

The ways in which orderly marketing can be brought about may be very different for different commodities. Orderly marketing may mean, for example, such an adjustment of shipments to demand as to put on the market throughout the year a fairly uniform amount each month. . . .

With such products as eggs, on the other hand, orderly marketing may mean placing a part of the product in cold storage during the season of heavy production to be moved out later. . . .

In an organization which controls a very small proportion of the product,

the problem of orderly marketing may resolve itself into a problem of forecasting the season's price and then selling a portion of the product whenever the price reaches or goes beyond this forecasted price. Or it may mean finding "gaps" in the market. . . .

Another possibility is that of diverting a portion of the product to other than the usual uses. Thus a berry growers' association for several years has taken berries which could not be sold at stated minimum prices off the fresh fruit market and sold them to canneries or packed them in sugar for future sale.

Milk producers' associations in many instances are using this method of regulating flow. . . .

When there are alternative outlets it is only "good business" to use them whenever they pay better than the usual outlet. . . .

It has been questioned repeatedly whether any decided advantages will arise out of studied regulation of the flow of the product into the market in the case of such commodities as grain and cotton, which are extensively bought and sold on organized produce exchanges. The claim is that in these instances the development of a class of speculative traders has so accurately forecasted future prices that as a matter of fact the farmer might in many cases market his product at almost any time in the year which suits his own convenience, without suffering material loss, because someone is always ready to buy. In proof of this claim figures have been presented showing the average prices by months over many years. The evidence tends to show that the prices prevailing at harvest time have not, on the average, advanced during the following months by more than enough to cover storage and handling charges up to the time another crop came onto the market. Here the probable gains from control of flow are frequently over-emphasized.

On the whole, control of flow to market is full of possibility when intelligently and boldly undertaken, but is equally full of danger when undertaken without adequate knowledge of facts or skill in execution of plans.

Evenness of distribution is a matter of particular importance in the distribution of perishable fruits and vegetables, especially where a given producing section must send its products to many markets and so distribute them as not to clog any one market while leaving another bare. . . .

Where coöperative associations have control of the bulk of a given product in all the leading sections, there is a possibility that these may be effectively federated after the plan of the American Cranberry Exchange. Once this is accomplished the way is open for more efficient distribution than now prevails. With most products such an ideal condition is still far away. . . .

Most people are inclined to under-estimate the importance of this type of adjustment and to overlook the sudden and extreme changes in demand which are all too common. A hot wave greatly stimulates the consumption of many fruits. A cold wave has the opposite effect on the demand for such products as melons and cantaloupes. But hot or cold waves do not hit all markets at the same time, hence the marketing agencies must make adjustments constantly and quickly.

Again a local crop near an eastern market materially reduces the demand for a California product ordinarily supplying that market. For example, rhubarb from the Hayward section of California finds a ready market in the middle west and east at certain times of the early spring, but its market is effectively blocked as soon as local rhubarb begins to arrive at those markets.

It has been pointed out that there are fairly definite limits to the amount of food each person can eat and that therefore coöperative advertising of food products will simply sell certain products at the expense of others.[117] There

[117] A. E. Taylor, "Your Inelastic Appetite," *Sunset*, 52(2):20–21, 58, 60 (February 1924).

is doubtless a large measure of truth in this contention. It matters little, however, to the California lemon grower whose product, if any, the lemon has displaced. Nor is the raisin grower greatly concerned if the raisin has displaced certain other foods. From the point of view of coöperative associations that are selling specific products, judicious advertising seems to have paid, and will doubtless continue to pay. . . .

Ordinarily a large volume of business is necessary in order to carry the heavy expense of national advertising. It is not likely that private enterprises handling California oranges and lemons through a large number of relatively small agencies could possibly have advertised those products and developed markets for them in the way the California Fruit Growers' Exchange has done. Nor is it likely that any group of individual firms would have put forth the enormous effort to widen the markets which the Sun-Maid Raisin Growers' Association has put forth. . . .

The lure of price control has been prominent in the propaganda of many an organization campaign. Its popularity arises out of the belief on the part of the farmer that everyone but himself does control price and that he too can do so if only he and his fellows become properly organized.

Individually the farmer is a notoriously weak bargainer because:

a. He does not know in what grade his product falls;

b. He does not know the relative value of different grades;

c. He does not know what his local price should be even when central market prices are known, and frequently he cannot even interpret wholesale market quotations;

d. He cannot follow market conditions closely enough to know at any given time whether market tendencies are up or down; and

e. He is slow in judging a proposition put in a new way.

Local organization may put a group of farmers in a somewhat improved position, particularly if their market is mainly local and not readily supplied from outside sources.[118]

Erdman's positive statements regarding the limitations of co-operatives are significant: "Cooperative associations cannot arbitrarily 'fix' prices. . . . Cooperative organizations cannot 'eliminate the middleman.' . . . Cooperative marketing cannot cut costs greatly."[119] It took courage to make those statements in the middle 1920's. Certain agitators of that day who led farmers to believe that co-operatives could wield a large influence on prices were far more popular with the farmers than the agricultural economist who tried to tell them the whole truth.

Two years later, Erdman and Wellman dealt with the problem of distributing to the producers the proceeds from the co-operative sale of fruit.

The cooperative fruit-marketing associations in California either handle the products of their members on a pooling basis or sell them on the individual grower's accounts. Pooling is generally the more satisfactory method. The chief advantages of pooling as compared with selling on the individual growers' accounts are: (1) pooling gives the individual grower

[118] Erdman, "Possibilities and Limitations," pp. 1–11.
[119] Erdman, "Possibilities and Limitations," pp. 18–19.

better insurance against the risks of marketing; (2) pooling facilitates the transfer of the control of the product from the members to the management; (3) certain costs may be reduced by pooling. . . .

Pooling is generally the most satisfactory method of giving the management of the cooperative marketing association control over the products of its members, and thus enables it to promote orderly marketing by regulating the distribution of the product as to time and place, and to develop new markets. . . .

The local pool may limit the effectiveness with which the sales agency can distribute the product among the various markets because it is to the interest of the local association to obtain the highest return for its products irrespective of the returns obtained by other locals. . . .

When the pooling period is short the tendency is for the members to try to regulate their deliveries of fruit according to the expected fluctuations in the market prices. . . .

Pooling tends to reduce certain costs of operation, particularly with regard to the physical handling of the fruit in the packing house and the accounting involved in making payments to the growers. A reasonably long pooling period makes possible a simplification of these operations.

The chief disadvantages of pooling as compared with selling on the individual growers' accounts are. . . .

It is difficult to maintain the proper differential between the members of a pool when variations exist in the time of maturity and in the quality of the product because of (*a*) varying efficiency of the individuals and (*b*) differences in climatic and soil conditions. . . .

The length of the pooling period affects the maintenance of the proper differential when the fruit in the pooling area matures at different times during the season. The possibility of obtaining additional returns from marketing fruit at one time rather than at another depends upon the existence of regular changes in the prices of the fruit during the season. If there is a pronounced normal seasonal variation in the prices of a given kind of fruit, it is necessary to have short pooling periods in order properly to compensate those growers who are able to market their fruit at the times when the price is normally high. . . .

. . . Among the more important factors which should be given consideration in selecting a pooling plan are the following:

1. Accuracy with which the fruit can be graded.
2. Variations in the quality of the fruit because of (*a*) differences in the efficiency of the growers or (*b*) differences in the location of the orchards.
3. Existence of normal seasonal variation in the prices of the fruit.
4. Variations in the time of harvesting fruit because of (*a*) differences in the efficiency of the growers or (*b*) differences in the location of the orchards.
5. Distance which the fruit can be hauled to the packing plant without incurring excessive costs or causing damage to fruit.
6. Economies of a large-scale plant for handling a particular kind of fruit.
7. Importance of market risks.
8. Amount of control needed by the management to promote orderly marketing.[120]

In 1916, when the southern California poultry producers were organizing, they apparently thought they knew what they wanted to

[120] H. E. Erdman and H. R. Wellman, "Some Economic Problems Involved in the Pooling of Fruit," California Agr. Exp. Sta. *Bulletin* 432 (Berkeley, 1927), pp. 42–46.

do. They were satisfied with the ideas they had. It was when they were in trouble in 1930 that they called on the College of Agriculture for help in solving their egg marketing problem.[121] Two agricultural economists were assigned to the task. They studied the existing organizations, and found a milling association, organized to supply the poultrymen with feed, and an egg selling organization. But they found that the egg marketing co-operative (The Poultry Producers of Southern California) was not able to pay as much for eggs as its competitors. This was partly because of its methods of functioning and partly because it was handling just one product, whereas the competitors were combining the egg business with the handling of other items. The economists recommended a new organization, strictly co-operative, which would handle feed and poultry supplies, sell eggs and dressed poultry.

The new association would have only one set of administrative expenses in connection with board and stockholders' meetings, accounting, auditing, legal expenses, in place of two as under the previous set-up of the two separate associations. Furthermore, as the new organization would be strictly cooperative it should not have to pay as high trading and income taxes as was necessary in the case of the Poultrymen's Cooperative Milling Association. A cooperative association should not encounter so much difficulty in selling feeds to its members. It might also be possible to secure economies in the delivery of feed and collection of eggs if both were done by one organization.

Further reductions in unit costs of operation should result from a larger volume of business. This could be attained by handling poultry products other than eggs, by handling part of the products shipped into Los Angeles by other cooperative associations on the Pacific Coast, and by winning increased support from poultrymen in southern California. As many of the criticisms of poultrymen against the set-up and policies of the two old associations would be removed in the case of the new association, increased support from local poultrymen should be expected.

It is probable that if the other cooperative associations on the Pacific Coast ship increasing quantities of eggs and poultry products into Los Angeles they will want a greater degree of control over the sale of such merchandise. It was suggested that, should such a situation arise, a central selling agency similar in structure to the Pacific Egg Producers, Inc., in New York should be established in Los Angeles, to which all the interested associations, including the new association, could belong. The new association in southern California would in such an event confine its operations to supplying feed to members and to collecting and grading eggs and other poultry products received from its members. The sale of its eggs, together with those of other member cooperative associations, would be intrusted to the central selling association.

Such an arrangement would seem to be a step toward that coordination of effort among cooperative associations which so many agricultural leaders deem essential to the progress of the cooperative movement.[122]

In a report to the Governor of California in 1930, the economists

[121] J. M. Tinley and E. A. Stokdyk, "Operations of the Poultry Producers of Southern California, Inc.," California Agr. Exp. Sta. *Bulletin* 516 (Berkeley, 1931), p. 4.
[122] Tinley and Stokdyk, "Operations," pp. 91–92.

of the California Agricultural Experiment Station summed up the existing situation in the state as related to co-operative marketing efforts:

Many of the improvements in the marketing of agricultural products have been attained through cooperative effort. The successful organizations have been especially effective in the development of new outlets, increasing the demand in old outlets, increased standardization, improvements in systems of distribution and handling, and in the correction of unsatisfactory marketing practices.

At the present time there are about 550 local cooperative associations in California and about 25 large-scale associations, some of which are federations of local associations above counted. The gross sales of these organizations during 1929 amounted to approximately 240 million dollars. Judging by the experience of the successful organizations, there is opportunity for co-operative endeavor in a number of additional fields.

There is, however, a real need for a clear understanding of the possibilities and limitations of cooperative marketing. The accomplishments of organizations operating along sound lines are generally recognized. The limitations are often overlooked. Most men today admit that a cooperative association can not arbitrarily fix prices; yet many denounce an organization which does not sell increasing supplies at continuously satisfactory prices — a thing which no organization, private or cooperative, can continue to do indefinitely. It must always be remembered that the volume of the product to be marketed must be adjusted to consumer demand if satisfactory prices are to be realized.

Producers, in numerous instances, have expected too much of co-operative associations in the way of surplus control. It should be pointed out that surplus control, as commonly conceived, involves the taking of a substantial loss on those portions of the product which are considered as surplus in order that the remainder may be marketed at satisfactory prices. In a cooperative association embracing less than all of the producers such procedure necessarily involves a situation in which those producers who are outside the organization obtain higher prices than those inside. Even with all the producers in one organization, outside competing regions are likely to be brought into the market as soon as prices become particularly attractive. Experience thus far indicates that no organization may expect to survive in which outsiders, for any length of time, obtain substantially higher prices than members. Compulsory cooperation is repulsive to most Americans, and probably is not possible under American law; yet some of the results which growers have expected of cooperatives could be obtained only under conditions in which every one was required to market in that way.

Where organizations have been particularly efficient they have naturally come to have substantial control of the commodity and will probably continue in that position so long as they continue to function efficiently. Outstanding examples of this sort are to be found in the California Fruit Growers' Exchange, the California Walnut Growers' Association, and the California Almond Growers' Exchange. . . .

Many cooperative associations in California are developing an important and growing business in supplying members with various types of farming requirements. Cooperative associations by buying in large quantities can frequently obtain for their members substantial reductions in price. They can also insure that goods bought are of a high and uniform quality, an important consideration where individual farmers have no means of testing the quality of such goods.[123]

[123] Agricultural Economics Staff, "Economic Problems of California Agriculture," California Agr. Exp. Sta. *Bulletin* 504 (Berkeley, 1930), pp. 68–70.

Missouri

In their educational and service work the agricultural economists of the University of Missouri found themselves facing the concrete problems with which the farmers had to deal. In 1923, the Missouri Agricultural Experiment Station issued a bulletin by Ralph Loomis on livestock shipping associations.[124] The bulletin gave the reasons for associated action and the extent of its development:

> Before the organization of farmers' cooperative livestock shipping associations the farmer who produced less than a carload of stock either sold his stock to local buyers or shipped with a neighbor. . . .
>
> Data taken from the records of the Meadville Shipping Association show that the farmer was justified in feeling dissatisfied with the old system of marketing and that the shipping association is to be a decisive factor in correcting abusive practices followed previously by some farmers and private buyers. Farmers have been known to fill their stock excessively before delivering to local buyers. Where this is done it forces the buyer to make the purchases on a wider margin than would otherwise be necessary. This works a hardship on the honest producer who does not fill his stock.
>
> Dealers have also been known to show favoritism by paying higher prices to certain men, particularly to car-lot producers. This means the small producer must suffer by selling on a wider margin. Local buyers also usually follow the policy of docking all sows and stags at the local shipping points. This often results in more loss through dockage than the primary market results would justify. The experience gained in neighborhood shipments made the association successful by teaching neighbors to work together and giving them all more accurate knowledge regarding shipping costs and the difference between local and primary market prices.[125]
>
> The cooperative plan of marketing livestock has been quite generally adopted in the territory supplying the Missouri primary markets.
>
> The Missouri Experiment Station in March, 1921, listed 275 Missouri organizations representing 74 counties. There are at present [1923] more than 300 associations actively at work representing more than 60,000 farmers.
>
> Our neighboring states of Illinois and Iowa have approximately 350 and 700 associations respectively. It is estimated that on March 1, 1921, there were actively engaged in marketing in the United States approximately 5,000 of these shipping associations. . . .
>
> Estimates received from various sources indicate that even as early as 1920 from 25 to 30 per cent of the shipments received at Missouri's primary markets were cooperative shipments. The highest percentage in any class of stock is in hogs, the lowest in cattle because of the fact that cattle are more often fed in car lots. Occasionally all the hogs received in any one day at a primary market are from cooperative shipping associations. In considering these percentages it should be remembered that the shipping association concerns primarily those farmers who produce stock in less than car lots. . . .
>
> Opinions concerning savings have been collected from various shipping associations by the Missouri College of Agriculture. Only one association admitted that it had made no particular saving over the old method of doing business. The other associations claimed to have made savings from $20 to more than $100 per car. Some organizations estimated their savings on a basis of so many cents per hundred pounds. Savings given in this way varied from 25¢ to $1.00 per 100 pounds, with an average saving of 60¢ per 100

[124] R. Loomis, "Cooperative Live Stock Shipping Associations in Missouri," Missouri Agr. Exp. Sta. *Bulletin* 199 (Columbia, 1923).

[125] Loomis, "Live Stock Shipping," p. 4.

pounds. This would mean a saving on hogs of about $100 per car. This amounted to slightly over 5 per cent of the value of the stock shipped.[126]

By 1927 it seemed wise for the Missouri Station to do as Stations in several other states had done – that is, issue an educational bulletin on co-operation which was a historical and descriptive study of co-operative marketing in Missouri. It covered 463 livestock shipping associations, 301 produce exchanges, 164 elevators, 78 devoted to fruit and vegetables, 8 to cotton, and 54 other locals.[127] The bulletin stated in a conservative way the benefits to be derived through farmer co-operatives in terms of better marketing services, better prices, and greater efficiency in production. Furthermore, it set forth its policy and functions in relation to co-operative marketing:

> One of the most important benefits of cooperative associations, as indicated by actual experience, is their influence on production methods. This has been mentioned in connection with the kind, quality and amount of products produced. But it extends also to efficiency in production. . . .
>
> What part should the College of Agriculture and other public agencies take in this development of cooperative marketing? . . .
>
> . . . public agencies are supported by taxes levied upon all of the people, and their primary function is to conduct scientific research and disseminate the knowledge thus gained through extension activities and in the classroom. They cannot, for several reasons, properly take part in the actual *promotion or direction* of individual cooperative organizations. . . .
>
> . . . the Missouri College of Agriculture and its department of agricultural economics will continue to follow the previously announced policy with regard to cooperative marketing, namely, that its functions are:
>
> 1. To teach, in the classroom, the principles of marketing and cooperation.
> 2. To conduct careful research to discover the truth about marketing conditions, and to make available the lessons which are contained in past and present experience with marketing cooperatively.
> 3. To carry this information to the farmers of the State.
> 4. To render assistance, so far as possible, in the *technical* problems of organization and management to such cooperatives and their members, present and prospective, as may request it.[128]

Some time after that statement appeared, the Experiment Station was requested to analyze the problems of a fruit and vegetable co-operative that was going in the red. The marketing of locally-grown produce in St. Louis had been unsatisfactory to the growers. The growers, therefore, organized a co-operative commission house in 1926. For three years the co-operative lost money steadily. That was the reason for its cry for help. The Station made a study of the problems involved in order:

1. To ascertain the deficiencies of present marketing arrangements, and particularly to discover any weak points which offer possibilities of improvement through cooperative marketing.

[126] Loomis, "Live Stock Shipping," pp. 3–4, 7.
[127] F. L. Thomsen and G. B. Thorne, "Cooperative Marketing for Missouri," Missouri Agr. Exp. Sta. *Bulletin* 253 (Columbia, 1927), Fig. 8, p. 18.
[128] Thomsen and Thorne, "Missouri," pp. 38, 96–97.

2. To determine the type of cooperative organization best fitted to accomplish these improvements.
3. To study the operating problems of the existing cooperative organization, with the view of making suggestions which might aid it in overcoming the many difficulties encountered.[129]

The economists' analysis of the problem showed that:

The prices of home-grown products on the St. Louis market are low relative to both shipped-in and home-grown produce on other markets. St. Louis, it is indicated, is in general a low priced, low quality market. It is subject to general and seasonal overproduction, and to market gluts and extreme price fluctuations, partly due to the local production and marketing situation, and partly to the unique position of St. Louis as a diversion point.[130]

. . . At practically all times there are a large number of cars either on track in or approaching St. Louis. If conditions in other markets appear unfavorable, or if it appears likely that shipping qualities of the product will not justify additional mileage, or if the St. Louis market should for any reason temporarily strengthen, some of these available cars can easily be diverted to the local houses.[131]

. . . The Growers' Company as at present constituted will be unable to materially affect these conditions. . . .

If the present type of organization is to be maintained, two alternative procedures are available. The Company may be run as a "last resort" market, or made into a cooperative commission house of the type which has been successful on another market. The Company must first be given the support of more growers if the latter objective is to be attained.[132]

The study provided the fact basis for understanding the situation in which the St. Louis County farmers found themselves. Studies of that type should precede the organization of a co-operative company.

Likewise, in response to requests, the Missouri Agricultural Experiment Station made a study in 1926–27 of the relative advantages of the various market outlets for dairy products. The results were published in 1929 and 1930.[133] The former publication was a comparative study of the butter industry, the purpose of which was to show the circumstances which had led to the development of the centralizer type of butter manufacture in Missouri and other states with a sparse dairy cow population. Large numbers of local co-operative creameries had been promoted and failed because of inadequate supplies of butterfat to insure low cost operations per unit of product. Yet the fact that local co-operative creameries in Wisconsin and Minnesota paid higher prices for butterfat than did the centralized creameries led to questioning in the minds of farmers, which made them easy prey of the creamery promoter. The economists of the university undertook to explain the situation and to point out the

[129] F. L. Thomsen, "The Cooperative Marketing of Fruits and Vegetables on the St. Louis Market," Missouri Agr. Exp. Sta. *Bulletin* 277 (Columbia, 1929), pp. 3–4.
[130] Thomsen, "St. Louis Market," p. 52.
[131] Thomsen, "St. Louis Market," p. 4.
[132] Thomsen, "St. Louis Market," p. 52.
[133] F. L. Thomsen and W. H. E. Reid, "Developing New Markets for Missouri Butterfat," Missouri Agr. Exp. Sta. *Bulletin* 267 (Columbia, 1929); F. L. Thomsen and W. H. E. Reid, "Factors Involved in Buying Missouri Cream," Missouri Agr. Exp. Sta. *Research Bulletin* 137 (Columbia, 1930).

necessity of having adequate butterfat production in a local area in order that the advantages of a local co-operative creamery could be realized.

The second bulletin, based upon the same piece of research, was intended to be helpful to centralized creamery operators in solving the problems of shortages and high costs in obtaining cream through shipping stations. The general effect of the two bulletins would appear to be to emphasize the fact that, where but small quantities of cream are produced in each community, the centralizer is a better market outlet for cream than is a local co-operative, and to point out to centralizer operators how to improve their procurement methods in a manner to enable them to pay farmers better prices for butterfat.

Co-operative elevators in Missouri also received attention from the Missouri Station.

> In 1925 there were approximately 170 so-called farmers' elevators in Missouri, most of which are still operating [in 1932]. Many of these elevators were organized and are operated strictly as private enterprises, with the single exception that some of the stock is owned by farmers. However, it is probable that at least 100 farmers' elevators are now operated as co-operatives. . . .
>
> With efficiency in operation equal to that of privately owned local elevators, the profits ordinarily accruing to the latter are distributed among the farmer members of the cooperative as patronage and stock dividends. In addition, the profits usually going to private grain dealers in the terminal markets may be retained for producers through the operations of the national and regional cooperative grain marketing agencies, which refund their earnings through the local elevators. These combined profits in some cases may amount to several cents per bushel, but generally have been less because full efficiency has not been attained.
>
> The cooperative elevator sometimes furnishes the local competition necessary to keep prices paid for grain and charged for supplies in line with prices at the central market and other local points. . . .
>
> The cooperative elevators can aid in raising the local price level for grain by improving quality, through encouraging a one variety community production program, furnishing pure seed free from weeds, and paying a premium for quality. The general tendency is for local elevators to neglect these important factors affecting grain prices. . . .[134]
>
> It is not customary for Missouri [cooperative] elevators to practice hedging.[135]

Other Missouri Agricultural Experiment Station bulletins prepared primarily from the point of view of agricultural adjustments to marketing conditions in the light of the prospective demand throw considerable additional light on the co-operative movement in Missouri, particularly with respect to strawberries and grapes.

Michigan

The agricultural economists of the Michigan Agricultural Experiment Station made a reconnaissance survey of the farmers' co-

[134] W. J. Hart, W. R. Fankhanel and F. L. Thomsen, "Operating Practices of Missouri Co-operative Elevators," Missouri Agr. Exp. Sta. *Bulletin* 311 (Columbia, 1932), p. 3.
[135] Hart, *et al.*, "Operating Practices," p. 8.

operatives in Michigan in 1924 and 1925. A firsthand study was made by visiting 486 local associations.

The aim in collecting and analyzing the data was to exhibit the nature and character of the permanent problems confronting cooperative organizations in the state, rather than to obtain a mere cross-section view of the financial status of these organizations at a particular time. The general character of the problems discussed may be summarized as follows:

1. The agricultural basis for the distribution of cooperatives in the state, and the principal influences determining the special characteristics of various types of associations.
2. The problems of a legal and economic character involved in the organization of different types of cooperative associations, and the conditions favoring the expansion of cooperation in the state.
3. External and internal conditions affecting the management of associations, from the standpoint of the economic, financial, and business problems involved.
4. The outlook for cooperation.[136]

The marketing organizations were classified as: Livestock, grain and beans, potatoes, dairy products, and fruit. Co-operative buying associations were also studied. A rapid growth in numbers had come during and immediately following the war. In 1914 they numbered 79; ten years later there were 486. Membership in central exchanges were reported by potato, livestock, grain, and fruit associations. Dairy products associations and stores were not so affiliated. In turn, the central exchanges were affiliated with the State Farm Bureau.

The authors stated that "the primary objective of a co-operative organization is to effect savings in the rendering of the services which it performs."[137] Upon inquiry they found that managers placed major emphasis upon the idea that co-operation provides an effective business unit and is a means of improving the marketing service.

> . . . Managers reported . . . that the local cooperative unit educates farmers in market requirements, sound business policies, etc. The result of this is to give to farmers a broader understanding of the factors which determine the prices of their products, because farmers directly participate in the management of the association. . . .
>
> It is a noteworthy fact that cooperative managers reported in only five instances that cooperation encourages specialization and standardization. Undoubtedly, the membership of local associations conceive of a cooperative business unit chiefly as a bargaining agency. . . . The fact that farmers constitute the actual membership of the cooperative form of organization has functional importance in the marketing process for the reason, as we have seen, that prices serve as a guide to the utilization of productive resources. In the measure, therefore, that the cooperative form of organization more clearly, accurately, and quickly carries to the farmer information respecting market conditions, the more efficiently it will serve as an agency in the marketing process as a whole. One of the most important tests of success of the cooperative form of organization as an agency in the marketing process, therefore, is the extent to which it serves the purpose of adapting farm

[136] C. F. Clayton and J. T. Horner, "Farmers' Cooperative Buying and Selling Organizations in Michigan," Michigan Agr. Exp. Sta. *Special Bulletin* 171 (East Lansing, 1928), pp. 5–6.
[137] Clayton and Horner, "Buying and Selling Organizations," p. 39.

organization and farm practices to market conditions and market requirements.[138]

Thus conceived, the co-operative association might become an important factor in bringing about agricultural adjustments in line with the marketing outlook. But the authors noted "this important function of local cooperative marketing organizations is at present imperfectly visualized and of small practical effect."[139]

American Institute of Co-operation

In addition to the educational work of the U. S. Department of Agriculture and the state colleges relating to co-operation, an independent educational endeavor was made which exercised a profound influence on the thought and action of those responsible for the co-operative movement. That endeavor was made by the American Institute of Cooperation which was organized at a time when considerable confusion had been developed by the differences of opinion between those who believed in building the co-operatives from the ground up and those who believed in building from the top down; that is, those who looked upon co-operation as a joint effort to put better goods on a better market and those who hoped to control the supply in a manner to enhance prices.

It was easy to start an argument on those subjects. But an argument was not what was needed. The need was for group thinking — a truly educational program, and that was what the founders of the American Institute of Cooperation proposed to create. The idea of an agency for comparing experiences and stimulating group thinking on the subject of agricultural co-operation grew out of thoughts and conversations by a few of the members of the National Cooperative Milk Producers' Federation.

Following the conferences among the cooperative dairymen in the summer and fall of 1923, Mr. Pattee brought before the annual meeting of the National Cooperative Milk Producers Federation at Pittsburgh in November, 1923, a resolution endorsing the idea of an Institute of Co-operation, and authorizing the officers of the Federation to confer with other groups as to the feasibility and the desirability of such a project.[140]

Upon returning to Washington from that meeting, Charles W. Holman presented the idea to members of the Bureau of Agricultural Economics of the U. S. Department of Agriculture. At the American Farm Economic Association meeting held in Washington, D. C., in December, 1923, Holman was called upon by H. C. Taylor to make a brief impromptu statement of the idea. A preliminary conference was held in the Department of Agriculture on February 11, 1924,

[138] Clayton and Horner, "Buying and Selling Organizations," pp. 40–41.
[139] Clayton and Horner, "Buying and Selling Organizations," p. 41.
[140] C. W. Holman, "Purposes of the Institute," in *American Cooperation*, a collection of papers and discussions comprising the first summer session of the American Institute of Co-operation, July 20 to Aug. 15, 1925 (Washington, D. C.: pub. by the American Institute of Cooperation, 1925), 1:10–11.

which was attended by H. C. Wallace who urged those in charge to press forward with the undertaking and promised the whole-hearted co-operation of the Department.[141] The Pennsylvania State Grange and the National Grange also endorsed the undertaking.

Early in 1924, C. W. Holman, E. G. Nourse, and H. C. Taylor went to New York City to present the idea to Beardsley Ruml, of the Laura Spelman Rockefeller Memorial Fund. Ruml grasped the significance of the movement at once and arranged to have the Fund contribute one dollar for every dollar raised from other sources. Richard Pattee, of the New England Milk Producers' Association, C. W. Holman, and E. G. Nourse took the lead in developing plans for the organization of the American Institute of Cooperation. They were assisted in practical ways by the men of the Department of Agriculture. Twenty-two organized groups of farmers and several individuals contributed funds which gave the new organization over $20,000 with which to start the work.[142]

Holman and Nourse became the principal organizers. Holman established outside contacts and made arrangements for the meeting. Nourse was responsible for the program. Thus a business manager and a professor worked shoulder to shoulder in making the Institute a success. The first session was held at the University of Pennsylvania in Philadelphia, July 20 to August 15, 1925. At that sesssion, men from the co-operatives participated as lecturers and as students, as did men from the universities and from the Department of Agriculture. Two-thirds of those who presented papers or led round-table discussions were representatives of the co-operatives. The men were there to learn from each other. E. G. Nourse stated the approach in making the program:

> . . . I know the purpose of the program committee was to say: "Here is a problem that the cooperatives are working on, and we have a diversity of experience in different parts of the country, and we have disparity of view in different parts of the country. It is pretty clear, too, that not all of them are right and not all of them are wrong. There is a mixture of right and wrong, and certainly the chairman of the program committee, or even the program committee as a whole, or the executive committee back of it, are not setting themselves up to be the censors of that thing, and to say, 'This is a part of the cooperative movement we want to have expressed,' or 'This is a particular leader whose views we want to have expressed to the exclusion of others.' " That the purpose which animated us in getting speakers here to fulfill it was a substantial problem. We endeavored to ascertain the men and the associations over this country who have done something that is vital so that it happens to be significant and aggressive and to secure their contribution of experience and thought. In asking that question we were asking what were the vital elements in the cooperative movement, and once that question was answered and so far as the time limits of our program committee permitted, we were ready to invite that individual or that association to come and make their contribution, to come and put up their cause as they

[141] Holman, "Purposes," 1:11.
[142] Holman, "Purposes," 1:13.

saw it, for the consideration of this group, to see what they could make of it. We hoped that such people would come with all the zeal that was in them, and present their cause honestly to be subjected to the suggestions and criticism of others, believing that if that were done that many who came here quite convinced that their own idea was 100 per cent right, would probably get a deeper understanding and a different perspective on the problem they had, and would go home perhaps to reexamine their own local conditions and needs, and to review again their past experience, and possibly to work out more effectively the evolution of their association in a substantial way.[142]

The first session was looked upon as a success. The Institute could plan with confidence for the next session which was held at the University of Minnesota from June 21 to July 17, 1926.

The practical workers in the field of co-operation continued to meet in the summer sessions of the American Institute of Cooperation along with the agricultural economists who were observing the co-operative movement, studying its successes and failures, and seeing the co-operatives in their setting in the whole national economy. It was a grand opportunity for the operators to get a larger grasp of the forces and conditions with which they had to deal. It was equally important as a means of bringing the agricultural economists into closer touch with the everyday problems of the co-operators. Fortunately, the proceedings, including the discussions as well as the papers, were published under the title *American Cooperation.* They should be found in all libraries serving agricultural students. The material is too voluminous to be summarized here. The reports in *American Cooperation* are commended as the most important source of information on the evolving status of the co-operative movement in the United States and Canada for the years 1925 and following.

Obtaining better prices continued to be a central idea in the co-operative movement, but the idea of price control by farmers' organizations was losing ground in the middle 1920's. Better quality of goods, graded and packed better for the market, and greater efficiency in the management of the marketing agencies were looked upon as fundamental. The outlook and the adjustment of production to market demands received attention, and at the end of the decade, with the Federal Farm Board advancing the money, many of the co-operatives undertook to stabilize the market by storing and holding products. From that experience much was learned that stimulated interest in government price supports and production control.

That the educational work of the universities and the U. S. Department of Agriculture in their relation to the co-operative movement had been useful was affirmed in 1925. A. J. McGuire, General Manager of the Minnesota Cooperative Creameries' Association, St. Paul, made this statement at the first meeting of the American Institute of Cooperation:

[142] Holman, "Purposes," 1:10.

. . . I feel that if it were not for the educational work of the United States Department of Agriculture and the State Department, experiment stations, agricultural colleges and the county agents, that this great cooperative movement would not have gotten across the first trench. . . . if the state educational system works out a problem and presents it to him [the farmer] in a common sense way, there is no man in the world quicker to take advantage of it. That is what has been done in Minnesota.[144]

Co-operation and Prices — Clyde King

Professor Clyde L. King[145] continued to work and write in this field. His book on milk prices,[146] published in 1920, was a by-product of his practical experience in arbitrating milk prices on the Philadelphia market. His experience gave him the fact background essential to understanding the human problem of "fair price." King believed in integrated co-operation — co-operation that included producer, distributor, and consumer. He said:

. . . the forces which fix the price of milk to the producer can be ascertained, and at any time or place the relative importance of each can be estimated with considerable accuracy. These forces are:

1. The competition between whole milk and other human foods at given prices;
2. Racial, national and local food habits with especial regard for what the consumers believe to be the food value of whole milk as compared with other available foods at the season's prices;
3. The value of milk for manufactured products such as butter, cheese, casein, condensed milk, ice cream, and milk powders;
4. The competition of butter fats with fats from other animal and vegetable sources;
5. The value of milk as a food for other farm animals;
6. The cost of producing milk;
7. The cost of producing milk as compared with the cost of producing other products of the farm, and compared with the cost of securing foods from the forest, the air or the sea with the resultant relative scarcity or abundance of these alternative foods;
8. The competition between different regions and different countries with varying adaptability to milk production;
9. The cost and method of distributing whole milk and milk products;
10. Transportation charges and facilities (local, national and international);
11. The buying power of milk distributors and manufacturers;
12. The selling powers of milk producers.

These various forces are usually lumped together as the "law of supply and demand."

Certain of these forces are subject to more or less control by consumers, others by dairymen, some by distributors and manufacturers, a few by city, state and national law makers, some by the productive power and policies of other countries; but not one is solely and absolutely under the control of any one of the parties interested. To be sure, consumers will decide what they will eat and farmers what they will produce. But the choices of con-

[144] A. J. McGuire, "Development of the Cooperative Creamery in Minnesota," *American Cooperation*, 2:37–38.
[145] Cf. *supra*, p. 571.
[146] C. L. King, *The Price of Milk* (Philadelphia: The John C. Winston Company, 1920).

sumers and producers, if rationally made, are each a resultant of those larger forces. The consumer will not refuse to eat dairy products if milk and its by-products can be secured at reasonable prices as compared with other foods of similar food value; nor will the farmer refuse to produce if the net returns from milk are equal to or greater than the net returns from the other alternatives before him.[147]

In speaking of the functions of dairymen's organizations, King said:

. . . Before the law of supply and demand can be operative, the buyer and seller must each have alternatives and equal bargaining power. Under the conditions indicated above this is possible only when all the sellers sell as one man to the one buyer. The law of supply and demand pre-supposes competition among buyers as well as among sellers if a fair price is to be reached. . . .

But there are numerous duties of dairymen's organizations, other than bargaining as to price. One is to get and maintain shipping facilities that many can secure which one cannot; another is to look after milk tests; another is to find and keep open the necessary markets. Much good is being done by such organizations, through coöperation with those who buy, to expand the market for milk by advertising and by creating and keeping good will. Then, too, net profits will increase by lowering production costs as well as by increasing selling prices. In feed and labor matters much can be and is being done by central organizations of dairymen. Furthermore, new markets must be found to meet new conditions.

All these and other functions are best rendered by the farmers themselves to the farmers themselves through their own representatives. Thus and thus only are the producers' interests fully protected.[148]

King believed that:

. . . price is not necessarily the result of iron laws that bind the hands of endeavor and stifle the voice of social need. Prices are man-made. They may have in them the sentiment of good will, the desire to do well, the sense of obligations to others, the ethical and living standards of those who buy and sell. Being man-made, prices are subject to human control and are in large part what we desire them to be, if we have but the vision, the skill, the persistency of endeavor and the good will that brings the coöperation essential to sound price adjustments.[149]

King pointed to the unhappy results which come from leaving it to the law of supply and demand to reduce milk production, also to the bad effect of farmers' organizations, organized distributors, or organized consumers working separately to influence prices, and said:

But in time wiser counsels prevail. Organized consumers, organized dealers and organized farmers get together. Each group states their needs and all learn that by coöperation each group can get justice in price.[150]

[147] King, *Milk*, pp. 35–37.
[148] King, *Milk*, pp. 137–38.
[149] King, *Milk*, p. 313.
[150] King, *Milk*, p. 315.

25.

Marketing Research, 1921-1932

THE PUBLISHED RESULTS of marketing research for this period are voluminous, especially during the last five or six years of the period when products of research based upon Purnell funds became available. Many of the commodity marketing studies issued between 1925 and 1932 were made with a view to providing a background in terms of which to readjust production in the light of outlook reports. They dealt with marketing outlets, not with a view to more efficient marketing but from the standpoint of adjustment of production. That class of material is represented in the section on outlook. (*See* pp. 447–79.)

The marketing studies presented here have been selected with a view to diversity of subject matter, as well as to presenting that which is typical of the better research. Unlike the studies of production and the early analyses of the functions of marketing, these studies fall into no recognizable pattern of work or of findings. As a rule each piece of research was initiated as a service to groups of producers who were in difficulty. Methods and results were as varied as the products, or the market situations or the genius of the men assigned to the project. Most of the studies provided background facts which were intended to enable farmers to choose more wisely where alternative opportunities in marketing were open to them. The question may be raised regarding some of the studies as to whether the authors were not overconfident in the efficacy of the workings of the law of supply and demand, considering the extent of the limitation of competition which existed at that time in various parts of the national economy. The excerpts in this section, as in other parts of this treatise, are to be read as reflecting the thinking of the time. Only in a few instances do they adequately take into account the rapid evolution of modern marketing facilities.

The subject matter of the research in agricultural marketing by members of the staff of the Bureau of Agricultural Economics of the

U. S. Department of Agriculture may be indicated by the fact that during the years 1921 to 1932 studies were made of the general subject of marketing, as well as co-operative marketing, prices, foreign competition, transportation, city produce markets, market statistics, and no fewer than 50 specified commodities. The volume is indicated by the fact that a bibliography on marketing agricultural products, covering the years 1924–31, presented 3,039 entries.[1]

In general the bulletins describe the geography of production, the methods of preparing the product for market, and the channels and agencies used in marketing the product. The studies are, as a rule, descriptive of processes and movements as distinguished from analysis of the economic forces involved and were therefore valuable in providing the facts essential to the development of a clear mental picture of the movement of farm products into the market. That picture, in the case of each product, provided the opportunity for the producer to see the setting in which he was working and gave him the background in terms of which to evaluate current information in planning his production and marketing program. In general that series of bulletins differed from the descriptive marketing bulletins of a decade earlier in Wisconsin in that they confined the description almost wholly to the distribution of the products, whereas the Wisconsin bulletins did that and also endeavored to follow the distribution of the consumer's dollar back to those who participated in the production and distribution of the commodity.

A rather illuminating exception to the rule is found in the onion studies where the price-making forces are described as follows:

> Bermuda onion prices are characterized by wide fluctuation both within each season and as between one season and another. This extreme variation, coupled with very high costs of production, renders the growing of Bermuda onions unusually speculative.
>
> Four groups of factors affect Bermuda onion prices: (1) Physical factors inherent in the given lot of Bermudas; (2) factors primarily determining the variations between seasons; (3) those factors influencing price fluctuations within a given season; and (4) those factors influencing prices principally at a given point. These groups may be severally subdivided into five or six factors, each of which may have an important effect at particular times. Probably the most important are the variety, quality, and condition of the stock, the amount of carry over of old onions, the prices at which these onions are selling when the season opens, the steadiness and volume of shipments of new stock during the season, and the period in the season.
>
> So close a correlation exists between the quantity of old onions in storage February 1 and the opening price of Bermuda onions, that it is possible to predict approximately the prices for Bermudas two months before the season opens. The quantity of old onions in storage exerts an influence on the opening and seasonal prices of the new stock out of proportion to the relative size of the old-stock carry over and the new crop of Bermudas.
>
> The size of the new crop exerts only a moderate influence on the price

[1] *See* "Bibliography on the Marketing of Agricultural Products," compiled by Louise O. Bercaw and Esther M. Colvin, under the direction of Mary G. Lacy, U. S. Department of Agriculture, *Miscellaneous Publication* 150 (Washington, 1932).

level at which the new crop will sell. The rate of shipments does, however, affect the price during the season considerably. The tendency of Bermuda prices every year is to decline as the season progresses. But whenever shipments are diminished materially, this tendency has been checked.

Poorly graded onions exert a depressing influence on prices to a greater degree than the difference in quality would indicate. They tend to accumulate in dealers' hands and by increasing the visible supply retard the sale of all onions.

Most of the factors affecting prices are beyond the control of the individual grower. He should do all he can to have his onions ready for the early market, he should grade carefully, and he should ship according to the market.

The big problems of marketing Bermuda onions can be successfully solved only by organized united effort. A thoroughly organized working organization of a good majority of those interested can (1) distribute the crop more thoroughly, develop markets not now being reached, and stimulate consumption by consciously directed effort; (2) feed the market gradually what it can consume during the Bermuda season at reasonable prices, instead of throwing the stock on the market at once regardless of demand; (3) install a system of grading and inspection that will prevent shipment of huge quantities of ungraded onions to clog the channels of trade; and (4) be ready to serve the industry whether marketing conditions are favorable or not, and ready to put forth unusual effort to move the crop in those years when marketing conditions are at their worst. A sufficient start has already been made to prove that all of these objects can be accomplished.[2]

An elaborate piece of descriptive work in the field of agricultural marketing was the study of milk marketing in New England by William A. Schoenfeld, the purpose of which "was to obtain and analyze the economic facts surrounding the production and marketing of milk and cream in the New England States as an aid in the development of a plan for co-operative marketing and a better program of production."[3] The maps and charts give the reader of the report a vivid picture of the sources of milk and the directions it takes in its flow to markets. One phase of the study related to causes of change in the amount of milk produced by a given group of farmers. The study showed that the price received for milk by the producer was a major factor but that feed prices and the wages of farm labor were also important factors.[4]

Both prices and production were rising from 1918 to 1920, but prices fell sharply from 1920 to 1922, whereas production continued to increase. This may be explained partly by the fact that feed prices fell more rapidly than did milk prices. . . .

. . . Since this covered the period during which production was increasing rapidly, it would appear that the relation of milk prices to other prices, rather than the milk price itself, controls production. . . .

. . . There was a general rise in milk prices relative to feed costs from 1916 to 1921 . . . .

The several studies discussed above show that changes in prices of milk, feed, and labor are the most important of the factors affecting subsequent

[2] W. M. Stevens, "The Marketing and Distribution of American-Grown Bermuda Onions," U.S.D.A., *Department Bulletin* 1283 (Washington, 1925), pp. 53–54.

[3] W. A. Schoenfeld, "Some Economic Aspects of the Marketing of Milk and Cream in New England," U.S.D.A., *Circular* 16 (Washington, 1927), p. 1.

[4] *See* Schoenfeld, "Economic Aspects," p. 34.

changes in production and that from 55 to 90 per cent of the production changes have followed previous changes in prices. Since the greatest effect becomes apparent after a year or more in most cases, it is possible to use these relations to estimate what changes in production are most likely to occur in the future.[5]

The studies of the milk producers' response to changes in prices would appear to be fundamental to the fixing of prices with a view to stimulating just the right amount of milk production.

The Bureau bulletins on the marketing of livestock give special attention to classes and grades of livestock and meat. In dealing with livestock classes, they follow the theories of Herbert W. Mumford of Illinois.

Bureau of Agricultural Economics

When the Bureau of Markets, of the U. S. Department of Agriculture, inaugurated its market-reporting service on livestock at Chicago in 1918 the market classes and grades of cattle as described in Professor [Herbert W.] Mumford's bulletin were used as the basis for formulating a tentative classification of standard market classes and grades of cattle for use in this market-reporting work. The tentative classification adopted at that time was the result of a conference held at the Chicago Union Stock Yards in which representatives of the. . . Bureau of Markets, various State agricultural colleges, Chicago Live Stock Exchange, the packers, and several trade journals all took an active part.

At present it is more or less generally recognized that if standard market classes and grades of livestock were in general use all persons connected with the livestock industry would be greatly benefited. Such an arrangement should aid in solving for the producer the questions of what to produce and where and when to sell it. He could then market the grade of livestock he produced at the market demanding it the strongest and willing to pay the most for it. This practice, if followed by all producers, should eventually result in orderly marketing, with all the benefits and savings which accrue therefrom.[6]

The bulletins on the retailing of meat had little direct relation to farmers' problems of marketing, yet they represented studies in one stage of the marketing of farm products.[7] The study showed:

> The average gross margin for individual retail meat stores of all sizes and types for 1923 was 23.56 per cent of net sales. . . . The average gross margin for carry stores was 22.98 per cent, and the corresponding figure for the limited-delivery group was slightly larger, being 23.09 per cent. The unlimited-delivery group average gross margin was 24.18 per cent, an increase of 1.2 per cent over that of the carry group.[8]

The most significant studies of cotton marketing issued by the Bureau of Agricultural Economics were those made by Alonzo B.

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[5] Schoenfeld, "Economic Aspects," pp. 38, 39, 48.

[6] D. J. Slater, "Market Classes and Grades of Cattle," U.S.D.A., *Department Bulletin* 1464 (Washington, 1927), p. 2.

[7] The American Institute of Meat Packers suggested to the Chief of the Bureau of Agricultural Economics (H. C. Taylor) the importance of these studies, which were provided for by Congress in the act making appropriations for the U.S.D.A. for the fiscal year 1924–25. Further appropriation for this work was provided for the year 1925–26.

[8] K. B. Gardner, "Margins, Expenses, and Profits in Retailing Meat," U.S.D.A., *Department Bulletin* 1442 (Washington, 1926), p. 13.

Cox, who had an unusual opportunity to study the price-making forces in the cotton market. Cox was employed by the Bureau in 1922 which gave him an opportunity to make himself familiar with the details of cotton marketing in the United States. The results of his study on types of cotton markets and price making in the futures markets were summarized:

> An understanding of cotton prices involves a study of the fundamental factors of demand and supply and of the machinery built up to bring these factors into trading relations. . . . Pertinent facts as to probable demand should be made available to growers, so that they may more closely coordinate the volume and the quality of their production to the wishes of the market.
>
> The values of many kinds of cotton goods, such as ducks, denims, sheetings, and the cheaper clothing, are determined largely by the value of raw cotton, and the price is an important factor in determining the amount taken. The amount of cotton taken by industry, however, is determined by the state of industry (notably automobile manufacturing, the building trades, and certain milling trades) rather than by the price of cotton. . . .
>
> The world's supply of cotton for price-making purposes consists of an aggregate made up from three crops: This year's crop, the carryover from the previous year (these two constituting cotton already in existence), and the anticipated amount of the next crop. . . .
>
> The thousands of markets handling American cotton are classified in different ways for different purposes. The various classifications point out peculiar characteristics of the markets and are valuable in the connection in which used. For the purposes of this discussion cotton markets are classified from the standpoint of predominant economic services performed into: (1) Spinners' markets, (2) futures markets, (3) centralizing spot markets, and (4) local or primary markets.
>
> Spinners' markets are located in or near mill centers and exist primarily to supply spinners' needs. . . . Price making in a spinners' market is largely concerned with bargaining on the "basis," of parity between spots and futures, prices in American markets being made in terms of New York or New Orleans futures.
>
> A cotton futures market is a place where cotton is bought and sold for future delivery on a rigidly standardized contract. The futures markets at New York, New Orleans, and Chicago in this country and at Liverpool, Bremen, Havre, Bombay, and Alexandria abroad are dealers in cotton for future delivery, or "futures." The futures market is essentially a price-making organization, and every discernible influence affecting supply or demand is reflected in this market. An adequate understanding of cotton marketing necessitates familiarity with the organization and methods of the futures exchanges.
>
> The centralizing, or spot, markets are the great reservoirs of spot cotton. Nearly every bale of cotton grown passes through one of these markets, and dealers and merchants draw upon them directly in supplying the needs of the mills. These markets are scattered throughout the Cotton Belt and function as assembling points and gateways through which large volumes of cotton move toward domestic and foreign mills. An important service rendered by the spot market is the classing and assembling of cotton in even-running lots as required by spinners.
>
> The primary market, or farmers' market, is the place where the grower meets the buyer. Quite often this market is a wagon market near the public square, where the farmer offers his cotton for sale to the highest bidder as soon as it has been ginned. The facilities in this local market differ widely,

and the buyers and sellers usually operate quite independently. The two main problems of the primary market grow out of the limited volume of business and inability of the farmer to know the comparative value of his product.

Price making in the futures market operates through the purchase of cotton for consumption and for speculation. On the supply side, it operates through the sale of cotton for immediate delivery or delivery in a named future month. Prices rise or fall with changes in the minds of traders in cotton as to the relationship between demand and supply.[9]

The second of Cox's studies of cotton marketing dealt with services:

Marketing, from the standpoint of the owner, may be considered as the means of converting a physical commodity into purchasing power or value. The efficient conversion of raw cotton into purchasing power — the delivery from the farm to the mill — necessitates the performance of several services: (1) Preparation, (2) standardization, (3) classing, (4) assembling and distributing, (5) warehousing, (6) inspection and regulatory work, (7) financing, and (8) furnishing information. An efficient marketing system requires in payment for its services only a small proportion of the value represented by the crop. This constitutes the "spread" between what the farmer receives and what the spinner pays for cotton.[10]

The first process is the separation of the lint from the seed and packaging the lint in the form of bales of about 500 pounds.

Standardization of a commodity is the setting up of authoritative measures of its qualities that are of economic significance. Efforts covering the last 100 years have brought cotton standardization to its present status, but the process will not be complete until the scheme of standardization embraces (1) grade, (2) color, (3) staple length, (4) character of the lint, and (5) weight, size, shape, and covering of the package or bale. Statistics of the industry will fall short of their maximum usefulness until commercial practices and trade terms are also better standardized. Standardization stimulates the improvement of the product, facilitates financing, and saves expense of inspection by making possible sales on description.

The purpose of cotton classing is to enable the farmer to sell his cotton on its merits, and the spinner to buy exactly what he requires with the least amount of expense and effort. . . .

Though a bale of cotton may change hands many times, it should be necessary to sample it but once. . . .

Cotton purchased by merchants is assembled in even-running lots to meet spinners' requirements. Distribution is accomplished through a vast system of warehouses and cotton yards, compressing plants and loading platforms, and a banking system evolved to "carry" the crop through time and space.

Warehousing is essential to efficient cotton marketing. It affords physical protection from damage by weather or dust; from loss because of fire, mutilation, or petty picking; and from "tag switching" and other forms of fraud or theft. It provides the means of converting the title to cotton into more desirable collateral and makes possible a policy of gradual marketing. The warehouse receipt should show, among other things, the grade, staple, and condition of the lint; the weight of the bale; the tag number; by whom the cotton was classed; and a statement as to the insurance of the cotton and

[9] A. B. Cox, "Cotton Prices and Markets," U.S.D.A. *Department Bulletin* 1444 (Washington, 1926), pp. 75–77.

[10] A. B. Cox, "Services in Cotton Marketing," U.S.D.A. *Department Bulletin* 1445 (Washington, 1926), p. 37.

the negotiability of the receipt. The value of the warehouse receipt depends further upon the structure and location of the warehouse, upon the insurance provided, the size and nature of the bond furnished, and the efficiency, integrity, and standing of the responsible officials. The Federal Government through the United States warehouse act and the principal cotton-growing States, through their legislative enactments calculated to meet the needs of the sections individually, are exercising considerable regulation and supervision over the warehousing of the American cotton crop.

The development of a high class inspection service, in connection with the adoption of universal standards for American cotton, should eliminate some of the cost of marketing cotton. Whether provided by private business concerns, independently, or under supervision by a State, or by the National Government, inspection should (1) give the distant buyer confidence in the seller's statements of quality and quantity of product, and (2) assure the owner that the commodity, and his rights in it, are fairly protected when it gets beyond his immediate supervision.

Regulatory measures may originate in trade organizations or in some Government unit. They should be resorted to only when all other methods fail to prevent undesirable practices or to encourage practices conducive to general welfare. Among the many regulatory activities affecting the orderly marketing of cotton should be noted those in connection with the cotton futures act, railroad transportation, railroad freight rates, cotton warehousing and compressing, the tariff, and fumigation of imported raw cotton and cotton waste. Regulatory measures should be definite, easily understood, and fair; and they should be impartially and intelligently enforced.

Cotton marketing requires the service of financing all along the route from the farm to the mill. Costs of ginning, transportation, classing, storage, compression, and insurance are immediate charges borne directly by either buyer or seller. The purchase must be financed, and the stocks must be "carried" from the time of harvest until ultimately required for mill consumption. This is usually accomplished by securing loans on warehouse receipts or bills of lading for cotton. In addition, both the grower of the crop and the manufacturer of the cotton goods require the services of financing.

Cotton market information concerning demand, supply, price, functions and relationships of the several markets, personnel of buyers and sellers, cotton handling methods and facilities, finance, and insurance is needed by all in the industry. Much valuable information on these subjects is available through public and private agencies and is disseminated by means of market reports, trade directories, commercial papers, the telegraph, and the radio. Railroad and steamship companies, freight brokers, compress companies, chambers of commerce, and banks furnish valuable facts along special lines.

Much has already been accomplished by cotton growers through efforts in the direction of cooperative marketing.[11]

A typical association agrees to perform services summarized as follows: (1) To class the cotton according to grade and staple, (2) to pool it in even-running lots for sale, (3) to market it in an orderly manner, and (4) to make final returns to the grower on the basis of the average price of the cotton in each of the crop-year pools in which he has cotton. To carry out these obligations to the best advantage, the associations (1) provide an expert sales force equipped with the best price quotation service; (2) put salesmen in all the big markets of the world; (3) borrow a large amount of money on bills of lading and warehouse receipts and advance it to growers; (4) obtain the freight refunds incident to concentration privileges for compressing; (5) prevent country damage and other loss by warehousing the cotton; (6) obtain

[11] Cox, "Services," pp. 37–39.

cheap warehouse and insurance services due to large volume of business; (7) obtain valuable statistical information too expensive for individuals and local associations to procure; (8) advise growers regarding the types of cotton most likely to be in demand, and in some instances take an active interest in inducing their members to grow better cotton; (9) through their publications, field-work service, classing schools, and other contacts, do some valuable work; (10) in some instances take an active interest in improving general marketing facilities, such as the elimination of gin damage and a more equitable adjustment of freight rates. They may eventually stabilize the price of cotton through the proper merchandizing of a large volume of cotton.[12]

The Bureau of Agricultural Economics sent Cox to England and later to the Continent to study the marketing of cotton through the principal cotton associations of Europe at the time when universal standards for American cotton were being established in Europe. The methods of handling and merchandising cotton at Liverpool, Manchester, Bremen, Rotterdam, and Havre were described and brief attention was given to methods at Ghent, Milan, and Barcelona. These were the centers of trade of the associations which had signed the agreement with the U. S. Department of Agriculture to accept United States cotton standards as universal standards for American cotton.[13] The purpose of the Cox study was to provide the Bureau of Agricultural Economics and the export cotton merchants with information on European methods of doing business. Two descriptive bulletins were issued.[14]

A circular on prunes partook of the character of studies on production and marketing made in many states — studies which furnished background in terms of which to evaluate data furnished by the agricultural outlook service in which federal and state agencies participated. The Bureau of Agricultural Economics had stimulated many studies of the kind, most of which were published by the state Agricultural Experiment Stations. The prune circular, prepared by Burke H. Critchfield, was produced at the request of the local agencies of the Northwest interested in the production and marketing outlook for prunes. To show the setting of the study we quote:

> This report presents the preliminary results of an economic study of the prune industry of Oregon and Washington. The purpose of this study was to obtain and analyze the economic facts regarding the industry as an aid to planning a better program of production and marketing.
>
> This study was undertaken by the Bureau of Agricultural Economics of the United States Department of Agriculture at the request of the prune growers, cooperative associations that market prunes, other packers and distributors of prunes, the agricultural experiment station and extension department of the Oregon Agricultural College, and various business interests in the prune area of Oregon and Washington.

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[12] Cox, "Services," pp. 36–37.
[13] Cf. *supra*, p. 625.
[14] A. B. Cox, "Marketing American Cotton in England," U.S.D.A., *Technical Bulletin* 69 (Washington, 1928); A. B. Cox, "Marketing American Cotton on the Continent of Europe," U.S.D.A., *Technical Bulletin* 78 (Washington, 1928).

Prices received for much of the 1926 crop were but little more than the cash outlay for harvesting and orchard operation. Growers in certain sections and some growers throughout this producing area for several years have not been obtaining from their prunes returns sufficient to operate their farms and orchards and maintain their customary standard of living. The fact that in some of these sections prunes are the major source of farm income has made the unsatisfactory economic condition of these growers of great concern to all other business interests in those communities.

Various efforts have been made to perfect marketing machinery which would improve the situation. Many plans have been suggested in recent months. Growers, farm and business leaders, and packers have all been attempting to work out a program of production, packing, and marketing that would aid in the improvement of the situation for all concerned.

In order to obtain facts which might aid in formulating such a program the present study resolved itself into these principal lines of analysis:

1. A study of the markets for prunes, both domestic and foreign.
2. Determination of the factors that influence the consumption of prunes in general and of prunes from Oregon and Washington in particular.
3. A study of the present and probable future output of prunes from these North Pacific States.
4. Consideration of the factors affecting the production of prunes in this and competing areas.[15]

Major questions in the mind of the investigator were:

1. What are the possibilities through improvement of the quality of the product, selling methods, advertising, and other means of increasing the demand for prunes from Oregon and Washington?
2. To what extent can returns to growers be increased through savings in distribution costs so as to give the grower a larger portion of the price paid by consumers?
3. Considering the present level of prices and production expenses in producing prunes and the probable returns from alternative lines of farm production adapted to the area, to what extent will prune growers who are least advantageously situated for prune production find it possible to turn to more profitable farming alternatives? What are these more profitable alternatives?[16]

The report ended with a suggestion based on the outlook for better prices:

Better prune prices, as a result of more uniformity in quality and pack of prunes, together with regularity of supply in so far as production conditions permit, will be only gradually achieved and will be significant from a long-time point of view rather than for the immediate future. Prune growers to whom the returns of recent years have not been satisfactory and who find it difficult to effect these improvements should consider whether there are other farming alternatives to which they can turn with profit.[17]

The study of alternatives is fundamental in planning agricultural readjustments in case of depressed prices. When prices are low in all lines of production, shifting from one line to another is not the action

[15] B. H. Critchfield, "Demand, Marketing, and Production of Oregon and Washington Prunes," U.S.D.A., *Department Circular* 416 (Washington, 1927), pp. 1–2.
[16] Critchfield, "Demand, Marketing, and Production," p. 46.
[17] Critchfield, "Demand, Marketing, and Production," p. 47.

essential to solving the problem. The cause of the difficulty may, and often does, lie outside of agriculture, in maladjustments in other phases of the national or world economy. An economic problem of the farmer is often far more than a farm economic problem.

Kentucky

In 1926, O. B. Jesness set forth his general philosophy of the relation between production and marketing:

> The farmer is confronted with economic as well as technical problems. In order to succeed he needs to know more than how to grow crops and raise livestock. He must know something about the economic side before he can select the proper combinations of farm enterprises under different conditions. He must know about market outlets and prices. If he is to plan his production properly he must give consideration to probable future market conditions. . . .
>
> The production and marketing aspects of the farmer's job are inseparably linked. A line cannot be drawn thru it so that everything on one side will relate only to production and on the other to marketing. The way in which a product is produced has much to do with its quality and consequently with its sale. The amount of a commodity produced is an important factor in determining market prices. The farmer needs to produce with his market in mind. Only in this way will the kind and quality of products wanted by the markets be supplied in proper amounts and only when the markets are thus supplied are the best results obtained.[18]

The Kentucky Agricultural Experiment Station dealt with marketing problems related to such commodities as hemp, grass-seed, tobacco, livestock and poultry. In an early bulletin special attention was given to methods of harvesting and preparing hemp for the market.

> Dressed hemp is quoted under grades known as single and double dressed, and double double dressed for long fiber, and single and double dressed tow for shorter fiber. The difficulty in marketing under these grades arises from the fact that the grades are not sharply defined, allowing a variation in any one of the grades from year to year in accordance with the judgment of the party placing the fiber on the market or of the buyer. Because of this condition manufacturers are not inclined to make quotations on grade or description and the process of selling hemp reverts to one of bargaining between buyer and seller. . . .
>
> Wherever hemp breaking plants have been established, thus bringing together the hemp producing area in one central marketing institution, there has been a noticeable widening of demand and a tendency toward better market levels, but even this advance in hemp marketing could be greatly aided by establishing hemp grades on a firmer basis.[19]

Another cash crop to which Kentucky farmers give attention is the production of grass seed. Bluegrass and orchard grass seed are produced extensively in that state. A marketing bulletin issued in

[18] O. B. Jesness, "Cooperative Marketing and Price Control," Kentucky Agr. Exp. Sta. *Bulletin* 271 (Lexington, 1926), pp. 259–60.

[19] J. R. Humphrey, "Marketing Hemp," Kentucky Agr. Exp. Sta. *Bulletin* 221 (Lexington, 1919), pp. 36–37.

1923[20] contains a map showing the distribution of Kentucky bluegrass seed in the United States. All states other than the cotton states from South Carolina to Texas and three southwestern states — California, Nevada, and Arizona — are buyers of Kentucky bluegrass seed. Orchard grass seed is marketed in essentially the same territory.

Bluegrass seed has been sold by the farmer in one of three ways. First, standing in the field before stripping; second, after stripping, but before curing; third, as cured seed in the rough. . . .

Probably the majority of farmers who harvest bluegrass seed, do it with their own equipment, then cure the seed and sell it in the rough to large dealers. . . .

Large dealers in Kentucky bluegrass seed, who own cleaning equipment, are located in Georgetown, Lexington, Paris and Winchester, Kentucky. These dealers have handled practically all the bluegrass seed which has been cleaned in the state. They buy seed in all stages, as some of them own strippers, but the bulk of the seed has been purchased as cured seed in the rough. When the seed is cleaned it is sold to wholesale dealers, jobbers, retail dealers and those who specialize in lawn grass mixtures. . . .[21]

Much of the [orchard grass] seed is purchased from the farmers by wholesale dealers thru field representatives who visit each farm and make a preliminary test of the seed by means of a small cleaning machine operated by hand. The approximate amount of recleaned seed which can be obtained from each crop is calculated from the test and the price offered is based upon this amount. The prices usually include delivery to the grower's shipping point from which the dealer pays further transportation charges. . . .[22]

The marketing of orchard grass seed after it leaves the farm has been left entirely to dealers. These dealers usually are engaged in handling other field seeds also. This affords the use of cleaning equipment, warehouse space, office supplies and labor in handling orchard grass seed, when needed, which can be used for other products during the remainder of the year.

The recleaning of orchard grass seed is an important service performed by dealers. Altho the process required is not as elaborate as in the cleaning of bluegrass seed, it requires accurately adjusted machinery and careful attention.[23]

There had been some efforts looking towards the co-operative sale of those grass seeds but with little success. The author pointed out the advantages of farmer co-operation but recognized that successful co-operation in that field was a matter of the future.[24]

The newly developed method of marketing livestock — through auction sale organizations — was described and suggestions made for its improvement in 1926.[25] The next year another bulletin on livestock marketing by the same author appeared.[26] It was a descriptive study of the method of marketing Kentucky livestock and gave special attention to the time of year of marketing different kinds of livestock, and to trends in production.

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[20] D. G. Card, "The Marketing of Kentucky Bluegrass and Orchard Grass Seeds," *Bulletin* 247 (Lexington, 1923).
[21] Card, "Bluegrass and Orchard Grass Seeds," pp. 37–39.
[22] Card, "Bluegrass and Orchard Grass Seeds," p. 53.
[23] Card, "Bluegrass and Orchard Grass Seeds," p. 51.
[24] Card, "Bluegrass and Orchard Grass Seeds," pp. 44, 58.
[25] E. C. Johnson, "Kentucky Livestock Auction Sales Organization," Kentucky Agr. Exp. Sta. *Bulletin* 270 (Lexington, 1926).
[26] E. C. Johnson, "Marketing Kentucky Livestock," Kentucky Agr. Exp. Sta. *Bulletin* 278 (Lexington, 1927).

Cincinnati receives more Kentucky livestock than any other market and Louisville is second in importance. . . .

One of the outstanding weaknesses of the local livestock market is the lack of attention to grades. Producers generally do not understand the variations in quality and condition of animals and their relation to price, and consequently much livestock is sold without a realization of the true market value. While many local livestock dealers are shrewd judges of market values of livestock, there are also a large number of dealers that do not fully understand market grades and the relation of grades to prices. This means that much livestock is sold by producers at prices that do not properly reflect the differences in quality and condition. In buying livestock at country points the usual practice is for the dealer to make one price on a farmer's lot of hogs, sheep and even cattle, altho in that lot there may be a wide variation in grade. The result of such a practice is that the farmer does not have the opportunity to learn the market values of his livestock and often fails to realize that the high grade livestock sells for higher prices than the low grade. Consequently such a system of buying at country points provides but very little incentive for the farmer to improve the breeding and feeding of his livestock.

The local auction sales organizations of central Kentucky have been a real step in progress, because they grade the sheep, hogs and calves and sell in lots according to grade. The farmer has therefore come to realize that the better livestock sells for higher prices and has taken steps to improve the livestock in order to get a greater return.

In the central livestock market the commission man sorts each consignment of livestock into lots which he figures will enable him to sell to the best advantage. The livestock is not sold directly on the basis of grade as the buyers examine each lot and form their own judgment in regard to the condition and quality of the animals. However, there is a wide range in prices which livestock bring, due to differences in conformation, condition and quality, and custom in the market has established certain grades which, while not official, are a basis for describing these differences. These grades are therefore a means for the buyer to indicate what kind of animals he wants and for the seller to explain what he has for sale.[27]

Marketing poultry products claimed the attention of Dana G. Card in two bulletins in 1928.[28] One related to the marketing of eggs and the other to poultry. The discussions in those two bulletins follow similar lines. For example, the following statement, with a slight variation in words, appears in both bulletins: "The receipts from the sale of poultry products form a much larger portion of gross farm income in sections of Kentucky where farm incomes are comparatively low than in sections where incomes are higher."[29] A major recommendation was that eggs be sold on the basis of size and quality and that farmers thus be encouraged to produce a high quality of product.

The production of quality products by the farmer should be met by an opportunity of receiving pay for his extra efforts. Trading in products strictly on the basis of quality will accomplish this. The universal use of standard grades for both eggs and poultry would be a decided improvement

[27] Johnson, "Livestock," pp. 73, 92–93.

[28] D. G. Card, "Marketing Kentucky Eggs," Kentucky Agr. Exp. Sta. *Bulletin* 283 (Lexington, 1928); D. G. Card, "Marketing Kentucky Poultry," Kentucky Agr. Exp. Sta. *Bulletin* 285 (Lexington, 1928).

[29] Card, "Eggs," p. 40; and Card, "Poultry," p. 148.

over present methods. Most produce dealers recognize the advisability of a more extensive use of grades as a basis of purchase price but the cooperation among them which is necessary to bring this practice into general use has not been developed.[30]

Merchants buy eggs in order to sell merchandise.[31] Hucksters also provide a means of marketing eggs. The produce dealers buy 18.3 per cent of the eggs they handle direct from producers, 19.2 per cent from hucksters, and 62.5 per cent from merchants.[32] Merchants disliked to handle poultry. "Most of Kentucky's poultry is sold directly to local produce dealers. . . ."[33] The two bulletins, while largely descriptive, point out means of raising the profits of the poultry industry.

Kinds and types of tobacco produced and methods of marketing tobacco were studied by O. B. Jesness. He said:

> As long as tobacco was shipped to distant markets, its sale commonly was in hogsheads. However, as tobacco manufacturing within the country developed and markets were established at interior points, buyers began to visit the farms and purchase tobacco in the growers' barns. This shift from making purchases at central markets to barn buying made its effects felt on the receipts at central hogshead markets. The importance of central hogshead markets was further reduced the early part of the present century by the development of cooperative selling organizations among the growers of dark and burley tobacco. The loose-leaf auction method of selling which had been started in Virginia and North Carolina previously, came into the dark districts of Western Kentucky and Tennessee about 1900 and into the burley district about 1905. With the decline of pooling movements in these districts, loose-leaf auctions came rapidly to the front as the important method of marketing. This was especially the case in the burley district. In the dark district, considerable buying at growers' barns continued to be practiced.
>
> The loose-leaf method of selling is familiar to everyone in southern tobacco sections, so no extended discussion of it is needed. Under this system the grower delivers his tobacco at a sales warehouse. These warehouses are built so as to have spacious floor-room and ample light, usually provided by means of skylights. The tobacco is unloaded and packed on tray-like baskets, the different grades made by the grower being placed on separate baskets. Each grower's baskets are kept together and are arranged in rows on the warehouse floor, leaving space for the auctioneer and buyers to pass between the rows. During the sale the auctioneer goes on one side of the row, usually preceded by a representative of the warehouse, who indicates a starting bid on each basket. The buyers on the other side of the row pull out hands of tobacco from the baskets and inspect them as a basis for their bidding. The sale is very rapid, from two to three hundred baskets an hour frequently being sold. The grower has a limited time after the bid has been placed on his basket during which he may reject the offer if he so desires. If he rejects, the tobacco is offered for sale at a later time. If he decides to sell he receives his check from the warehouse for the amount due him and the warehouse makes collections from the buyers.[34]

The solution of at least part of marketing difficulties must take place on

[30] Card, "Eggs," p. 41.
[31] Card, "Eggs," p. 40; and Card, "Poultry," p. 149.
[32] Card, "Eggs," p. 19.
[33] Card, "Poultry," p. 127.
[34] O. B. Jesness, "The Marketing of Tobacco," Kentucky Agr. Exp. Sta. *Bulletin* 287 (Lexington, 1928), pp. 258–59.

the farms. One situation which has created difficulty in selling tobacco has been the lack of adjustment between production and market requirements. There is place for better planning of the amount of production. Tobacco growers in the past have based their decisions too much upon prices received for the previous crops and too little upon the probable future demand. This has resulted in shifts in and out of tobacco production. Not only does the farmer need to plan on the basis of the amount which the market may be expected to require, but he also needs to note trends in demand. With cigarette consumption increasing and the demand for plug tobacco decreasing, adjustments from the types and grades suited for chewing tobacco to those in demand for cigarettes to meet the change became desirable.

Uniform grades are not in general use in the tobacco market at present. In the absence of uniform grades and large central markets there is no quotation which supplies an accurate guide to market conditions. The average grower is not in a position to judge closely as to whether or not the price offered is in line with the quality of his crop.[35]

Kansas

The second phase of marketing research in Kansas was given direction by R. M. Green who, in the 1920's, focused attention upon how to adjust the kind and quality of production and the time of marketing in a manner to yield the farmer the most favorable results. George Montgomery has described that period of the marketing work at Kansas State College:

> The most significant development in agricultural marketing in this Department of Agricultural Economics was during the 1920's when Professor Green developed courses in marketing and also was instrumental in expanding the research projects. . . .
>
> . . . The first extensive research developed by Professor Green was in the field of grain marketing. Through his leadership other projects, particularly livestock marketing, were developed. Because of Professor Green's special interest and also because farmers apparently wanted much additional information on price movements, much of the early work was devoted to analysis and exploration of fluctuations and movements of prices of farm products, especially of wheat and corn, cattle, hogs and sheep. The studies conducted by Professor Green and Professor Henney dealt primarily with seasonal, cyclical and longer time movements of prices of these commodities. Professor Green devoted much study to seasonal price movements which were expressed for farmers in relatively simple terms rather than in more complicated statistical procedure. For example, much information was prepared for classroom use and also for the use of the Extension Service which was in terms of changes in prices from the first 10 days of one month to the first 10 days of the next month, or in other cases price movements over a longer period of years were expressed in terms of the number of times prices advanced from one month to the succeeding month and the number of times prices declined from one month to the succeeding month. The circulars and bulletins published during this period indicate the type of information which was provided. There were, of course, other specific marketing problems such as the storage of grain, channels of movement for both grain and livestock and some studies dealing with costs through various channels. Also, during the late 1920's rather extensive studies were undertaken to deter-

[35] Jesness, "Tobacco," pp. 269–70.

mine the factors and conditions that influenced the efficiency of operation and the stability of organization of cooperative elevators.

Since substantial emphasis was given to providing price information to farmers during the 1920's, a brief review of the publications may be helpful in indicating the activities of the Kansas Agricultural Experiment Station. In June 1924 a brief statement indicating the probable trends of prices of Kansas farm products for the succeeding 30-day period was published. That statement, under the title of 'The Kansas Agricultural Situation," [*see infra,* p. 726] was prepared by the Department of Agricultural Economics and distributed by the Extension Service. That publication has been continued without interruption since that time. . . . During the latter part of the 1920's frequent brief statements concerning the outlook or price situation for individual farm products were prepared for the use of the extension economists who were assisting farmers to keep farm records. At the same time Doctor Grimes, Professor Green, Professor Henney, and others of the department prepared similar statements at frequent intervals which were broadcast over the college radio station. About 1930 these were developed into a weekly mimeographed statement concerning the shorter time outlook for Kansas farm products and were mimeographed under the title "The Weekly Trend of the Markets." . . . Another type of information provided for farmers was outlook statements based to a substantial degree upon the statements prepared by the U. S. Department of Agriculture, with some additions and adaptations to Kansas conditions. Frequently these were issued as special seasonal commodity outlook statements to be used by the extension economists and county agents.[36]

With this general review of the marketing work at Kansas State College prior to 1932 in mind, let us turn for a little more detail to some of the published bulletins. Green's attention was given first to the marketing of wheat. The wheat storage problem in Kansas seemed to be of first importance. Regardless of the price situation in the wheat market, the farmer who did not have storage space was forced to sell his wheat when threshed or pile it on the ground and assume the risk of weather damage. In response to a felt need, the series of Kansas bulletins on wheat marketing was initiated in 1922 by a study of farm wheat storage. The purpose was stated:

> The purpose of this bulletin is to point out first, the importance of the wheat storage problem in any attempt to give the wheat grower a more satisfactory market. Second, to show how this storage problem arises and how big a problem it is for Kansas wheat growers. Third, to indicate what would have to be done to solve this storage problem, and more particularly in this first report to indicate the importance of farm storage as a factor in the marketing of Kansas wheat.[37]

That bulletin reported on the rate at which the mills and the export trade milled or exported the wheat and showed that the farmers were selling more wheat in July, August, and September than called for by the mills and the export trade.[38] The survey also showed that farm storage space for wheat in Kansas was "fairly ade-

[36] Letter dated March 30, 1948, from George Montgomery, Head of the Department of Agricultural Economics, Kansas State College of Agriculture and Applied Science, Manhattan, to H. C. Taylor.

[37] R. M. Green, "Farm Storage as a Factor in the Marketing of Kansas Wheat," Kansas Agr. Exp. Sta. *Bulletin* 229 (Manhattan, 1922), p. 6.

[38] Green, "Farm Storage," p. 16.

quate for a crop up to about 50 per cent above average," but 5 per cent of the farmers had no storage space.[39]

Another factor which had more to do with the early marketing of wheat than storage space was credit. Fifty-seven per cent of the farmers reporting were under the necessity of borrowing money in order to hold their wheat.[40] The extent to which farmers were forced to sell for lack of credit was discussed in 1927 in a bulletin which showed that between 18 and 20 per cent of the farmers were having credit difficulties.[41]

The second wheat marketing study related to the production and marketing of wheat rich in protein with a view to obtaining a premium for quality.[42]

The problems of storage and credit were associated with the problem of when to sell. The Kansas group of agricultural economists endeavored to provide the farmers with facts which would tend to improve the accuracy of their judgment on when to sell. A circular issued in 1925[43] charted average prices, month by month, throughout the year for a series of 32 years and endeavored to show the factors which determine market trends. Two years later Green and Stokdyk stated the problem of timing the marketing of farm products:

> The producer of any commodity must of necessity pass judgment on market trends. He is called upon by circumstances outside of his own control to forecast prices. Right or wrong he must make up his mind when he is going to sell his products, and his success depends to a large extent upon his ability to gauge his selling operations in accordance with demand. . . .
>
> This circular is prepared to point out the risks in the wheat market. Underlying these risks are the size of the wheat crop in the main wheat producing countries, the demand for it, and the movement of the crop to market. Periods of heavy marketing are most usually periods of low prices. To be able to anticipate and avoid periods of heavy competition and take advantage of periods of light competition enables one to secure a better return for his product.
>
> Four main points are taken into consideration in attempting to analyze a market situation from a supply standpoint:
>
> First, What is the total supply?
> Second, Where is it?
> Third, When will it move to market?
> Fourth, What is its composition or quality?
>
> These four factors are of prime importance in estimating the probable trend of wheat prices. . . .
>
> The demand side of the wheat market situation is analyzed by taking into consideration the following:
>
> First, What are the needs of importing countries?
> Second, When will the importing countries need supplies?
> Third, What are domestic requirements?

[39] Green, "Farm Storage," p. 26.
[40] Green, "Farm Storage," p. 26.
[41] R. M. Green, "Effects of Shortage of Farm Storage Space and Inability To Get Local Bank Credit on the Movement of Kansas Wheat to Market," Kansas Agr. Exp. Sta. *Bulletin* 244 (Manhattan, 1927), p. 21.
[42] L. E. Call, R. M. Green, and C. O. Swanson, "How To Grow and Market High-Protein Wheat," Kansas Agr. Exp. Sta. *Circular* 114 (Manhattan, 1925).
[43] R. M. Green, "Seasonal Fluctuations of Wheat Prices, Kansas Agr. Exp. Sta. *Circular* 121 (Manhattan, 1925).

The size of crops in each of the main importing countries has a direct influence on their demand for supplies from exporting countries.[44]

The purpose of the circular was to help farmers understand the significance of each of those seven supply and demand factors. The outstanding importance of the wheat marketing work in Kansas arose from the fact that the leading farmers of the state utilized the results of research, which prepared their minds for grasping the significance of the timely information given them from month to month or week to week. That wheat marketing work in Kansas was an admirable example of co-ordinated research and extension in answer to a felt need.

Four other bulletins came out of Kansas from 1926 to 1932 which sought, in a practical way, to provide the means of improving the farmers' judgment on production timing and sale of beef cattle, hogs, fruits and vegetables, and potatoes.[45]

The philosophy lying behind the bulletins on marketing that emanated from Kansas during that period seems to have been that prices are determined by supply and demand. Any information enabling the farmer to judge whether prices are relatively high or relatively low at a given time, in light of the potential supply and probable demand, will prove useful to the farmer. The *Kansas Agricultural Situation* was issued each month to give the farmer the outlook for the next 30 days with regard to the supply and demand situation relating to wheat, corn, hogs, cattle, butter, poultry, and eggs. A study of the monthly forecasts of price trends shows that historical, geographical, and seasonal, as well as statistical, data were drawn upon. The aim was to educate the farmer in interpreting market news and to provide information from market-wide sources.

Massachusetts

The Massachusetts Agricultural Experiment Station issued five economic studies of the apple industry of that state in the years 1925 to 1929. The first of those studies related to the cost of marketing the apple crop. The idea which led to the preparation of that report was stated:

Knowledge of costs is a necessary antecedent to control over them. Increasing competition from other producing regions makes it necessary that Massachusetts orchardists know their costs, and be prepared to reduce them, or to give better marketing service, in order to maintain the strategic position which is and should continue to be theirs. The study which this bulletin reports was initiated, therefore, as an attempt to determine the factors of

[44] R. M. Green and E. A. Stokdyk, "Judging Price Risks in Marketing Wheat," Kansas State Agricultural College, *Extension Circular* 54 (Manhattan, 1927), pp. 3–4.

[45] H. J. Henney, "Factors Influencing the Time of Buying Feeder Steers and of Selling Them as Choice Summer-Fed Steers," Kansas Agr. Exp. Sta. *Bulletin* 258 (Manhattan, 1932);
R. M. Green and Harold Howe, "Year-to-Year and Seasonal Fluctuations in Hog Prices," Kansas Agr. Exp. Sta. *Circular* 132 (Manhattan, 1926);
E. A. Stokdyk, "Some Factors Influencing the Mid-Season Potato Market," Kansas Agr. Exp. Sta. *Technical Bulletin* 28 (Manhattan, 1931); and
E. A. Stokdyk and G. M. Reed, "Standard Packs, Packages and Grades for Kansas Fruits and Vegetables," Kansas State Agricultural College *Extension Circular* 53 (Manhattan, 1926).

cost which Massachusetts orchardists must meet in getting their product from the tree to the market which they serve. . . .

Information was collected by personal visits to growers. . . .

The study leads to certain definite conclusions.

1. Sale to country buyers is the least profitable method of sale.
2. It pays the grower to grade his apples. How closely this may profitably be done depends, obviously, upon the character of the crop.
3. Sales on commission returned, to the growers reporting, the highest average prices and the highest average margins over costs of marketing. These sales were made in some cases throughout the season, thereby taking advantage of the season of highest prices. The 10,000 bushels sold cooperatively were in this group.[46]

The second study was part of a co-operative undertaking. The purpose was a knowledge of the New England apple situation and outlook.

The apple growers of Massachusetts, in common with those of the other New England States, have felt for some time the need of more definite knowledge of the apple industry — the number and ages of trees of different varieties, and the volume of the commercial crop. In order to obtain this information it was determined by a group representing the Experiment Stations, State Departments of Agriculture, the New England Research Council, the Federal Bureau of Agricultural Economics and the New England Crop Reporting Service, that a study should be made of the apple industry of New England. The purposes of this study were, specifically:

1. To secure information as to number and age of trees and the trend of planting.
2. To discover the valume of the apple crop and the amounts put on the market.
3. To discover the relative importance of each commercial variety.
4. To determine the relative importance of orchards of different size.
5. To discover common orchard practices in different producing areas.
6. To learn the relative importance of apple growing as a source of farm income.
7. To determine the relative importance of different methods of marketing.
8. To discover the extent to which grading is done.
9. To learn the prices received and the reasons for price differences.
10. To determine available farm storage space and the quantities stored.
11. To determine probable future production.

Methods and Scope

The method employed in Massachusetts was personal interview with each owner of a commercial orchard. . . .

Visits were made to over 2,000 apple growers and complete schedules were secured from 1,754. . . .[47]

The bulletin of 30 pages described graphically the geography of the principal varieties of apple trees in Massachusetts and the stage

[46] L. P. Jefferson, "The Costs of Marketing the Apple Crop of 1923," Massachusetts Agr. Exp. Sta. *Bulletin* 224 (Amherst, 1925), pp. 1, 2, 9.

[47] H. W. Yount and L. P. Jefferson, "An Economic Study of the Massachusetts Apple Industry," Massachusetts Agr. Exp. Sta. *Bulletin* 228 (Amherst, 1926), p. 86.

of growth with respect to bearing age. The analysis of the orchards led to these conclusions and recommendations:

> The future of the apple growing industry in Massachusetts and its profitableness to the farmer depend upon the amount and quality of future production. . . . Large numbers of trees are just coming into bearing and yields will increase with maturity. Many of the large orchards of the state now bearing will not reach full production for at least ten years, and over 300,000 trees not bearing at present will come into bearing during the period. . . .
>
> It is estimated that the total commercial crop of the state will increase at least 100 per cent within fifteen years. The largest part of this increase will be Baldwin and McIntosh, and the latter will undoubtedly show the greatest increase of any variety. . . .
>
> Securing profitable markets for the probable increase in production is a matter of the utmost importance. . . .
>
> A larger quantity of high grade home-grown apples, particularly McIntosh, is reducing the sale of Western apples on local markets. Doubtless this supplanting of Western apples can be carried still further. . . .
>
> Exporters report a growing demand for American apples of good grade in foreign markets. This market should be carefully guarded from apples of poor quality. . . .
>
> Under present conditions, the careful grower will not plant more trees until the market situation has been adjusted. . . .
>
> The growing demand for McIntosh indicates that there will be little demand for other native varieties reaching the market at the same time. Prices of winter varieties will also be affected by the longer storage of McIntosh.[48]

With an outlook for a continually increasing production of apples in Massachusetts, the agricultural experiment station undertook to discover where New England apples were being consumed with the view of finding sections of the market which might take more apples. The study "was arranged in order to determine the competitive position of Massachusetts and New England apples in both domestic and foreign markets; to analyze the factors which limit the demand; and to determine, insofar as possible, the measures by which the market may be improved."[49] The study led to the conclusion:

> The demand for New England apples is increasing in practically all markets of the state, this growing demand being greater for eating than for cooking varieties. . . .
>
> The demand for apples of good quality and uniform size is also increasing. . . .
>
> Purchases by the pound are increasing. . . . This fact must of necessity intensify the demand for good quality fruit, since customers are more exacting as to quality when purchasing but a small quantity at a time.
>
> The demand is chiefly for the McIntosh as an eating apple. Dealers generally believe that only a small part of the possible demand for this variety is now supplied. In both Boston and New York many regard the possibilities of the extension of the market as practically unlimited.
>
> The Baldwin is the variety chiefly in demand for cooking purposes. . . .
>
> There is at present comparatively little advertising of New England

[48] Yount and Jefferson, "Apple Industry," pp. 106–08.

[49] L. P. Jefferson, "The Market Outlet for Massachusetts Apples," Massachusetts Agr. Exp. Sta. *Bulletin* 231 (Amherst, 1927), p. 2.

apples. It is undoubtedly true that systematic advertising and distribution would bring about larger consumption. . . .

Bananas and oranges are the greatest competitors of apples on the Boston market.

Foreign markets absorb about 9 per cent of the average commercial crop of the United States. It is evident that failure of this outlet for our apples would result in disaster to the industry. . . .

In foreign as well as in domestic markets there is need of better sorting and grading of apples, since the foreign demand for fruit of good quality is also increasing. . . .

Because of the better storage facilities, some of the more popular varieties are on the market for a longer period than formerly, and in consequence prices of other varieties are held to a lower level. The effect of the McIntosh upon the Baldwin price is the best example of this influence.

Storage facilities likewise tend to decrease the seasonal fluctuations in prices of all varieties.[50]

A special study was made of the McIntosh apple in the New York market.[51] The study confirmed the belief of McIntosh growers that the people of New York City would take many times what they then received and that New England apples of that variety were equal to any received on that market.

Lorian P. Jefferson's fifth bulletin on apples presented the results of a study of consumer demand. The point of view was expressed:

The purpose of production is the satisfaction of the requirements of consumers. In order to meet them efficiently, it is necessary to know the character and extent of the demand. . . .

This study is undertaken in the firm belief that attention has been centered too much on methods and volume of production and too little upon the purposes of production. The importance of the consumer as a factor in the marketing of all products has been too much overlooked.

The purpose of the study is to determine with as great accuracy as possible the exact nature of the demand for apples[52]

In summing up the results of her study, the author said:

It is evident that in the three southern states of New England the Baldwin is the favorite apple for cooking and the McIntosh for eating raw. These varieties can likewise be identified by more consumers than can any other varieties.

The prices over four seasons show the McIntosh to be the favorite apple in the Boston market. . . .

Flavor seems from consumers' reports to be the chief factor influencing the purchase of apples, although dealers report that color is very important, most customers desiring only red apples. . . .

The per capita consumption of apples in the United States is less than one bushel, and while the total consumption is increasing, this increase is not keeping pace with the increase in population. This indicates that the per capita consumption is gradually declining.

No correlation has been established between wages, either nominal or real, and the price of apples, nor between real wages and per capita con-

[50] Jefferson, "Market Outlet," pp. 39–40.

[51] L. P. Jefferson, "The McIntosh Apple on the New York Market," Massachusetts Agr. Exp. Sta. *Bulletin* 243 (Amherst, 1928).

[52] L. P. Jefferson, "The Consumer Demand for Apples," Massachusetts Agr. Exp. Sta. *Bulletin* 250 (Amherst, 1929), pp. 53, 55.

sumption, this lack of correlation indicating that the consumption of apples does not depend on wages nor the purchasing power of wages.[53]

That study appeared to confirm the judgment of New England apple growers in having made Baldwin and McIntosh apples the leading varieties planted. Should one conclude, therefore, that the growers had sensed consumer demand through market demand and adjusted their production accordingly?

Thus the studies of the outlook for apples as a guide in production and marketing were in line with Cance's studies of onions and tobacco (cf. *supra*, p. 563). They were economic studies in which it was assumed that production should be guided by demand but also that new markets could be found and consumption stimulated in old markets by improved quality of product. The emphasis was upon expanding the market rather than readjustment of production.

Minnesota

Ways in which the members of the staff of the Division of Agricultural Economics at Minnesota sought to promote good business methods are brought out by Black and Guthrie in their discussion of creamery organization. The study of the economic aspects of creamery organization was an effort:

> . . . to analyze the variations in prices paid for butterfat in so far as they are due to organization, and to some extent management, especially the economic aspects of organization and management.
>
> The final test of efficiency of a creamery is the price that it pays for the butterfat in a given grade of cream. This depends upon three things — the price received for butter, the cost of manufacturing and preparation for market, and the percentage of overrun.[54]

Data on which the analysis was based were obtained from 88 Minnesota creameries by a special survey.[55] From one point of view, that bulletin was a study in production economics applied to the first stage in the marketing of a dairy product.

> For each creamery covered in the survey complete financial records were obtained, as well as estimates of the distribution of time of labor and management. The floor space of each creamery was measured and an inventory taken of the plant and equipment. A cost accounting system for creameries was devised and the data for each of the 88 creameries were put through this system separately. Thus there resulted 88 separate sets of accounts showing 88 separate labor, space, equipment, and other costs per pound of butter; likewise 88 separate receiving, babcock-testing, churning, and other process costs per pound of butter. These costs vary greatly. The variations have been analyzed and the factors responsible for them have been determined wherever possible.[56]

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[53] Jefferson, "Consumer Demand," p. 71.

[54] J. D. Black and E. S. Guthrie, "Economic Aspects of Creamery Organization," Minnesota Agr. Exp. Sta. *Technical Bulletin* 26 (University Farm, St. Paul, 1924), p. 109.

[55] Black and Guthrie, "Organization," p. 3.

[56] The method of partial and multiple correlation analysis was used wherever it promised results. Combining accounting and statistical methods in this way in a cost study promises many valuable results. Only by the survey method is it ordinarily possible to bring together

It should be made clear at this point that the purpose of this analysis is not to determine costs. Costs have been introduced merely as a means to the end of discovering economy in creamery organization. Costs in themselves have little value for such a purpose — it is only when they are analyzed in combination with other organization facts that useful conclusions can be derived.[57]

. . . this bulletin is as much a study of methods of analysis as it is of creamery organization.

The results of this analysis show the major factors responsible for these variations and indicate their relative importance wherever possible. Some of these factors are subject to immediate control, others to control much more slowly, others to control only when a new plant is built, or in many cases, only when the creamery service for the whole surrounding territory is reorganized along more economical lines.[58]

The test used in comparing the efficiency of creameries was the price the creamery was able to pay the patron for his butterfat. That price, which was the price for which the butter was sold by the creamery management minus the operating expenses of the creamery, showed a wide range. The causes of the differences were stated:

. . . if there were no differences in overrun or creamery costs[59] per pound, butter price would still produce a range, excluding irregular cases, of 13 cents per pound of butterfat. . . .

. . . If prices for butter and overrun were the same for all creameries, differences in creamery costs . . . would still make a difference, excluding irregular cases, of 9 cents a pound of butterfat.

The ordinary range in overrun . . . is from 20 to 26 per cent. If butter prices and creamery cost were the same for all creameries, there would still be a difference, excluding irregular cases, of 3 cents per pound of butterfat, due to overrun variations.

The principal cause of variations in butter prices is the quality of the cream delivered. . . . The possible range due to differences in cream . . . was 6 cents.

The principal factor in quality of cream is the frequency of its delivery. Many farmers in Minnesota can not afford to deliver more frequently — the extra price received for fresher cream will not pay for the extra cost of hauling oftener. This is the case on farms a long way from creameries and with few cows. . . .

The quality of the cream can also be improved by better sanitation and more cleanliness in handling the milk and cream, and better care of the cream while it is awaiting delivery.[60]

. . . creameries receiving the same grade of cream on the day of the visit did not all receive the same average price for their butter for the year. . . .

One explanation is the difference in time of year when the butter was sold. . . . Creameries delivering only 51 per cent of their cream in the six

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enough cost records at any one time to allow statistical analysis of results, and then the question arises as to whether the survey method does not introduce so many errors in the original data as to vitiate the results. This study throws considerable light on this question. In many ways, creameries lend themselves especially well to such a study. Creamery plants are similar in type and methods. Ordinarily, only one product is turned out. Also, co-operative creameries especially, must keep reasonably good records. On many points, however, the data are inadequate or biased. The bias in some cases can be partly eliminated by statistical methods. In other cases, detailed daily cost records will be needed.

[57] Black and Guthrie, "Organization," p. 22.

[58] Black and Guthrie, "Organization," p. 110.

[59] Really "margins," as profits and patronage dividends are combined with costs.

[60] Black and Guthrie, "Organization," pp. 12–14, 18, 19.

summer months, in 1919 received for the same grade of butter 1.7 cents more per pound than those delivering 70 per cent of their cream in the summer. . . .

Another cause for differences in butter prices received is freight costs. On a car consisting of 300 tubs of butter (18,900 pounds) the freight cost to New York at present is $364.54; for the same butter shipped at "less than carload" rates, it is $543.12. . . .

Another factor in differences in prices is skill and judgment in choosing a market and a commission firm. These, however, are relatively unimportant. More important are the differences in prices charged patrons for butter, differences in prices at which butter is sold locally, differences in packing the butter, whether in prints or tubs, etc.

There still remains an estimated difference of 2.3 cents of the total range of 10 cents per pound to ascribe to the buttermaker himself and his plant and equipment. . . .[61]

TABLE V

Estimated Range in Average Annual Rates Received for Butter in 1919 Which Was Due to Several Causes

Causes	Possible range*	Share in actual range†
	Cents	*Cents*
Quality of cream	6.0	4.0
Skill in buttermaking, and plant equipment	4.0	2.3
Seasonal variations in receipts	2.0	1.7
Marketing methods and costs	3.0	2.0
Total range	15.0	10.0

* This means that if some of the creameries receiving the poorest cream had also the poorest buttermakers and equipment, the most expensive marketing methods, and lowest relative cream receipts in winter; and some of those receiving the best cream had exactly the opposite of the above in all three particulars, the difference in price received for butter would have been 15 cents.

† This means that because some of the creameries with poor cream had fair to good buttermakers, and vice versa, and so for the other three factors, the actual range between highest and lowest was only 10 cents excluding irregular cases.

The next important way to reduce the range in butter prices is to get better buttermakers. Small weak creameries can not ordinarily hire high-class buttermakers — the larger creameries with better quality of cream outbid them. . . .

We can conclude, therefore, that the range in price received for butter can be reduced considerably by improving the buttermakers; to some extent by taking better care of the cream; to a greater extent, but more slowly, by improving the quality of the cream along with more dairying and more frequent deliveries; and to some extent by shipping in carload lots. Perhaps the range of 10 cents can in time be reduced to 5 or 6 cents, but it will take a long time to do it — the next ten years may make a difference of 2 or 3 cents.[62]

[61] Black and Guthrie, "Organization," pp. 16–17.
[62] Black and Guthrie, "Organization," pp. 18, 19, 20.

Other Minnesota bulletins applying the same general type of analysis of marketing institutions dealt with potato warehouses, creamery efficiency, and grain elevator organization.[63]

In discussing the development in the 1920's of the marketing studies at the University of Minnesota, J. D. Black said:

> . . . marketing analysis developed along the following four lines: (a) by individual commodities; (b) by marketing functions; (c) by marketing institutions, agencies and firms; and (d) by areas. . . . We led out at Minnesota in a shift toward an approach along the lines of (c). We insisted that marketing business was transacted by firms and not by functions and much of it not by individual commodities. In the economics of the last five years we have had a tremendous growth in discussion of "the theory of the firm." We began studying marketing from this point of view at Minnesota in 1922. The Black-Guthrie study is this kind of a study. So was the potato study. The basic theory is largely the theory of production economics applied to an enterprise engaged in distribution instead of primary production.[64]

New York — Cornell University

James E. Boyle went to Cornell as Professor of Rural Economy in 1917. He was author of a contribution on the subject of agricultural marketing which came from Cornell prior to the series of bulletins inspired by G. F. Warren. His book on agricultural marketing stated the relationship of quality to price as a general principle:

> First place in the book is given to consumer demand, because the author believes this is the correct starting point for the study of agricultural marketing. Stress is naturally laid on quality and standardization of product. The author holds that there is no way to get a good price for a poor product.[65]

Boyle said further:

> The fundamental step in marketing is to adjust production to consumer demand. . . . The farmers, particularly the organized farmers, may exercise a beneficial degree of control in at least five ways: (1) quantity of output; (2) quality of output; (3) distribution as to place and time; (4) [stimulating] demand; (5) shift in production.
>
> To maintain a profitable agriculture the farmers must adjust quantity production to effective demand. . . .
>
> After due allowance is made for farmer control over quantity production, quality production, distribution and demand, there yet remains the major factor in adjusting production to consumption, namely, shifts in production. A shift in production means the changing from one crop to another. Shifts in production may be short-time or long-time shifts. When a shift is necessary, the farmer ought to recognize that fact and yield to it, rather than resist it. . . .
>
> Any substantial changes in transportation. . . any development of new industrial or mining centers . . . any development, in short, of new markets

[63] J. D. Black, B. A. Holt, and G. M. Peterson, "Economic Aspects of Local Potato Warehouse Organization," Minnesota Agr. Exp. Sta. *Technical Bulletin* 28 (University Farm, St. Paul, 1925);
H. B. Price and C. M. Arthur, "Management Problems of Farmers' Elevators," Minnesota Agr. Exp. Sta. *Bulletin* 224 (University Farm, St. Paul, 1925);
B. A. Holt and W. B. Combs, "Judging Creamery Efficiency," Minnesota Agr. Exp. Sta. *Bulletin* 231 (University Farm, St. Paul, 1926); and
H. Metzger and H. B. Price, "Economic Aspects of Local Elevator Organization," Minnesota Agr. Exp. Sta. *Bulletin* 251 (University Farm, St. Paul, 1929).

[64] Letter from J. D. Black to H. C. Taylor, dated May 5, 1948.

[65] J. E. Boyle, *Marketing of Agricultural Products* (New York: McGraw-Hill Book Company, Inc., 1925), p. v.

or new production areas, will of necessity force a shift in agricultural production in some other area. Thus production and marketing are inseparably bound together.[66]

The publications of the Cornell Agricultural Experiment Station indicate that the Cornell group of agricultural economists, while keeping an eye on the farmer as a manager, gradually developed a keen sense of the importance of providing him with full information regarding the markets for which he was producing. The market outlook was considered a necessary part of the information essential to good farm management. The principal studies in marketing related to cash crops and dairy products. This followed logically Warren's findings in his farm surveys that dairying supplemented by cash crops provided, as a rule, the most profitable system of farming for the state of New York.

In 1925, the same year that Boyle's book appeared, E. G. Misner prepared a study on the marketing of cabbage.[67] That bulletin described ten agencies which participated in the marketing of cabbage, discussed their services and their costs, and emphasized the importance of anticipating prices at harvest time as a guide in determining which cash crops to grow and how much to produce. The importance and methods of storing cabbage were stressed. The bulletin ended with practical advice to producers, local buyers, storehouse operators, and wholesale receivers.

Roger B. Corbett's study of the fruit and vegetable shippers of western New York was based on dealers' records and was designed to determine the shipper's costs and margins. The study led Corbett to the conclusion:

> The costs of marketing fruits and vegetables are high. Contrary to public opinion, these high costs are due, not to the exorbitant profits of middlemen, but to the costs of the necessary services. Like most small businesses, the competition in the shipping of produce is sufficiently keen to prevent extreme profits. Undoubtedly there are years when the majority of concerns shipping produce show a good profit; but the data obtained in this study give rather conclusive evidence that there are years in which severe losses are suffered.
>
> It is probable that marketing costs can be reduced by a study of the services that must be performed, the costs of these services, and the factors affecting the costs. Such studies should point to ways of increasing efficiency.[68]

Dilworth Walker's bulletin on marketing green peas was a study of production costs on farms and methods of marketing. He not only described the areas and methods of production in New York State but showed the freight rates paid by the New York farmers and their competitors in North Carolina, South Carolina, and California:

> The competition between the different market-pea areas has greatly changed, thru the effect of the relatively high prices for the past eight years.

[66] Boyle, *Marketing*, pp. 55, 62, 65.
[67] E. G. Misner, "The Marketing of Cabbage," Cornell Agr. Exp. Sta. *Bulletin* 443 (Ithaca, 1925).
[68] R. B. Corbett, "An Economic Study Concerning the Operations of Fruit and Vegetable Shippers in Western New York," Cornell Agr. Exp. Sta. *Bulletin* 453 (Ithaca, 1926), p. 42.

Prior to 1924, New York peas had no competition except from New Jersey during the month of June. By 1925, however, Colorado, Idaho, and Utah peas had become serious factors in determining the price of late peas in August and September. In 1926, shipments from California and Washington during the last part of June and the first part of July affected the price of early varieties. . . .

The effects of this competition between the various regions are shown clearly in the price variations. In the winter and early spring, shipments are light and prices are relatively high. As the spring crops come in from other regions, prices gradually work lower. The first shipments from each successive region coming on the market sell for higher prices than do the peas from the preceding area. The average price for each region, however, gets lower as the season advances and as the supplies increase. California, Mexico, and Florida peas sell for the highest prices. Then the peas from Arizona, South Carolina, Mississippi, North Carolina, Virginia, Maryland, New Jersey, and finally New York, sell at an average price lower than the peas from the preceding area commanded.[69]

The studies in milk marketing related to the demand, the competitive sources of supply, and the comparative cost of the various methods of putting milk into the city market. In 1925, L. J. Norton and Leland Spencer submitted a bulletin on milk marketing in New York.[70] That bulletin discussed milk consumption, the New York areas supplying milk, the available supply and its variation, the processes of marketing milk, and the co-operatives participating in the service.

H. A. Ross, who, while at the University of Illinois had studied the milk marketing problem of the Chicago area[71] prepared a bulletin on the demand for milk in the New York City milk market which gave a comprehensive analysis of the variations in demand due to such factors as seasons, weather, vocations, and the long-time trend in the city's demand for milk.[72] The objective was to find the basis of forecasting the demand for milk in that city from week to week, season to season, and year to year, with a view to guiding production.

. . . the quantity of milk and cream that will be needed in the future can be computed rather accurately from the data on long-time trend and seasonal variation. . . .

Prediction of sales on the basis of regular or calendar variations can be made as far in advance as is desirable. Obviously, the long-time forecasts will be less certain of fulfillment than the short-time predictions, but the general method of applying these data is the same for all. In June, for instance, a dealer may wish to know what his demand will be in November in order to arrange for supplies to tide him over the shortage period. Taking his current sales as a base, he would increase or decrease them in proportion to the long-time trend of his business. Then from the proper seasonal-variation table he would find the percentage that November sales were of June sales, and correct for this factor. For a more immediate forecast he

[69] D. Walker, "The Production and Marketing of New York Market Peas," Cornell Agr. Exp. Sta. *Bulletin* 475 (Ithaca, 1929), pp. 15–16.

[70] L. J. Norton and L. Spencer, "A Preliminary Survey of Milk Marketing in New York," Cornell Agr. Exp. Sta. *Bulletin* 445 (Ithaca, 1925).

[71] See *infra*, p. 737.

[72] H. A. Ross, "The Demand Side of the New York Milk Market," Cornell Agr. Exp. Sta. *Bulletin* 459 (Ithaca, 1927).

would correct for the day of the week and possibly for a holiday. Weather forecasts for the week would give him an approximation of the correction for the weather factor, while the daily temperature would serve as a guide for the bottling of the next day's milk.[73]

With regard to the relation of demand and price, Ross said:

Milk prices, like prices of other products, are subject to the law of supply and demand. A quantitative study, however, shows that there is little elasticity in the demand for milk so long as prices are kept within reasonable limits. For this reason, it is impossible to move a large amount of surplus milk into consumptive channels by lowering the price. On the other hand, a retail price which goes down one cent in the spring and up one cent in the fall protects the interests of both consumers and producers. Under this system, the difference in the seasonal cost of production is more equitably distributed. Even more important than this is the fact that consumers, accustomed to occasional changes in the retail milk price, do not materially curtail consumption if supply and demand conditions necessitate an advance. It was the lack of this system that was largely accountable for the disruption of the dairy industry in New York in 1916, when public opinion delayed a price advance until a milk strike and decreased production eventually forced a change.[74]

In 1931, Ross looked at the other side of the coin and produced a study of the *supply* of milk for the New York market.

The principal data serving as a basis for this study were: (1) the total pounds of milk delivered monthly at each milk-receiving station or factory; (2) the number of farms from which the milk was received; and (3) the percentage of fat in the milk. In addition, dairy-survey records on several thousand individual farms were available for more detailed analysis. For the most part, these data were obtained directly from the records of the larger milk distributors and manufacturers. They were supplemented by records on a large number of small plants which were made available through the courtesy of the Department of Agriculture and Markets of the State of New York.[75]

That also was a descriptive bulletin in which trends in supply as well as the sources were covered.

Catherwood's study of the sources of the New York City milk supply[76] was primarily a production study, but it covered the growth of the demand for milk and cream in the New York City market.

In the meantime handling costs of fluid milk and cream were dealt with by C. K. Tucker.[77] Four classes of plants were covered in his bulletin: "Thirty-eight plants shipping raw milk in 40-quart cans; 18 plants shipping pasteurized milk in cans; 15 plants shipping pasteurized milk in bottles; and 10 plants shipping pasteurized cream in 40-quart cans." The cost of plant operation per 100 pounds of milk in raw milk plants was 22.9 cents; in pasteurizing plants, 32.8 cents; in bottling plants, 61.3 cents; in cream plants, 161.7 cents.

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[73] Ross, "Demand," p. 65.
[74] Ross, "Demand," pp. 65, 67.
[75] H. A. Ross, "The Supply Side of the New York Milk Market," Cornell Agr. Exp. Sta. *Bulletin* 527 (Ithaca, 1931), p. 7.
[76] M. P. Catherwood, "A Statistical Study of Milk Production for the New York Market," Cornell Agr. Exp. Sta. *Bulletin* 518 (Ithaca, 1931).
[77] See C. K. Tucker, "The Cost of Handling Fluid Milk and Cream in Country Plants," Cornell Agr. Exp. Sta. *Bulletin* 473 (Ithaca, 1929).

Some of the factors that affected the cost [of plant operations] per 100 pounds of milk are: volume of milk per plant; amount invested in plant and equipment; arrangement of the plant, with particular reference to labor efficiency; seasonal receipts of milk; and method of refrigeration.

In each case the volume of milk received at the individual plants was by far the most important factor affecting the cost [of plant operations] per 100 pounds. . . .

The variation in receipts of milk at different seasons of the year affected costs by making it necessary to provide facilities adequate to handle the maximum volume, with the result that these facilities were not used to capacity during the remainder of the year. A smaller plant, less equipment, and less labor, are required to handle a given annual volume of milk when the deliveries are comparatively uniform, than when there is a wide variation in the amount of milk received in different months.[78]

Illinois

During the ten years prior to the passage of the Purnell Act in 1925, marketing research received little attention at the University of Illinois. However, during the eight years following the Purnell Act, a series of bulletins relating to marketing was published by the Illinois Agricultural Experiment Station. They dealt with marketing of milk, grain, livestock, fruit, soybeans and soybean products, and the trade areas developing new industrial markets for farm products.

That series was initiated in 1925 by a study of milk in the Chicago market.[79] Director H. W. Mumford prefaced that bulletin, and at the same time the studies on other phases of agricultural marketing, with this statement:

If marketing conditions for agricultural products are to be improved, plans for improvement must be built on a solid foundation of ascertained facts, not upon opinion and guesswork. This bulletin describes many of the significant conditions surrounding the Chicago milk market, the present agencies for distribution, and the trend of consumption, with special reference to the problem of surplus milk.

It is the purpose of the Agricultural Experiment Station to collect and publish from time to time similar facts concerning other agricultural products. It is hoped that these will constitute a sound basis for the improvement of marketing facilities.[80]

Ross described the purpose and the methods of the milk marketing study:

The present investigation was undertaken with the twofold aim of analyzing the Chicago milk situation and of determining some of the fundamental facts underlying milk marketing. It was thought that past failures of cooperative marketing organizations were due in many instances to lack of knowledge of the economic principles involved. Much thought has been given in the past to the form of organization but, unquestionably, too little attention has been paid to obtaining the economic facts of milk marketing upon which to base sound marketing practice. . . .

The data, obtained for the most part during the year October, 1922, to

[78] Tucker, "Cost of Handling," pp. 118–19.

[79] H. A. Ross, "The Marketing of Milk in the Chicago Dairy District," Illinois Agr. Exp. Sta. *Bulletin* 269 (Urbana, 1925).

[80] Ross, "Milk," Foreword.

September, 1923, are of two kinds: (1) survey data obtained by the issuance of questionnaires to all of the milk dealers in Chicago, and (2) detailed data taken directly from the books of a few dealers. . . .

The study is built about the problem of surplus milk. With this in view, production and consumption are first studied separately. Considerable attention is given to the demand side of the market, not because it is considered the most important, but because very little is known concerning it. The problem of surplus milk is next considered and this is followed by a brief comparison of the Chicago milk prices and prices of milk in the regions producing a surplus. . . .

The great volume of milk produced in the outer zones of the Chicago area has already been tapped for the Chicago market, and larger and larger amounts will be drawn from it in the future as the city market grows. If the extension of the Chicago dairy district proceeds at a rate just sufficient to meet the needs of an increasing population, the development will be sound. If, however, high fluid-milk prices or any other factors cause the outer zone to change too rapidly from a dairy manufacturing region to a milk shipping region, the dairymen supplying Chicago at the present time will suffer, because the city market cannot possibly absorb the milk they are producing and that now being produced in the more remote regions. . . .[81]

At the present time, by far the largest part of the milk entering Chicago comes from within the zone bounded by the transportation rate of 40 cents per hundred pounds. Practically double this amount of milk is produced in the territory bounded by the 45-cent rate line.[82]

Seasonal variation in production, variations in demand, and alternative uses to which surplus fluid milk was put were discussed. The discussion was pointed toward facts to be taken into account by farmers in considering what price would, in the long run, be to their best interest.

No matter what plan of price determination is used in the Chicago district, it seems obvious that the city fluid-milk price must always be considered in relation to the prices of other dairy products for three reasons:

1. During certain seasons a very large proportion of the milk purchased for the city market must be utilized for other dairy products.
2. The city market is normally the most desirable. Dairymen selling to the lower-paying markets are always glad, therefore, to divert their milk to the city if prices are sufficient to overcome the obstacles of distance and to pay for the extra work entailed.
3. Conversely, unless the city fluid-milk price is high enough to pay for the additional care which is necessary, dairymen will shift to one of the markets with less-exacting requirements.[83]

Three years later the Chicago milk market was again studied, this time in connection with the distribution and consumption of milk in three other cities: St. Louis, Peoria, and Quincy. Special emphasis in that bulletin was upon "costs and margins." It followed the idea of studying the question of who gets the money which the consumer pays for a quart of milk:

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[81] This prediction has since been fulfilled. High prices in the summer of 1924 attracted Wisconsin milk and cut many producers in the inner district out of a market.

[82] Ross, "Milk," pp. 461–63, 471.

[83] Ross, "Milk," p. 532.

A large portion of the Chicago milk distribution, at least 95 percent of which was dispensed to the retail trade, was sold during 1925 and 1926 at an average price of 12.91 cents a quart. Of this amount 5.33 cents was paid to the producer; 2.20 cents was for expenses of purchasing, receiving, and processing; 4.60 cents was for selling and delivery expense; .31 cent was for general and administrative expense; and .47 cent was the net income realized by the distributor. . . .

In the Chicago market the average yearly margin between the price paid producers for their milk and the retail quart price (which difference is often termed the dealer's gross margin) was 8.7 cents in 1925 and 8.5 cents in 1926. In 1927 it averaged 8.6 cents. The increase from the gross margin of twenty years ago (4.7 cents in 1908) is largely the result of increased complexity in milk marketing, of wage increases, expansion of the dairy production district, and improvements in milk quality, as stated above.

The above facts indicate to the investigator that two economic changes of far-reaching consequence to Illinois dairymen are in process; namely, decentralization in production and centralization in distribution. Decentralization in production has been greatly stimulated by recent improvements in milk transportation which render available a milk supply several times larger than the demand of the fluid-milk consumption centers. Dairymen in regions several hundred miles from large fluid-milk markets, where land, wages, and taxes are relatively cheap, are now enabled to compete with long-established dairymen in districts near the large cities, where land prices, labor costs, and taxes are much higher. Some readjustment to this particular situation is already in progress in northern Illinois.

In contrast to production, distribution is gradually becoming more centralized. Economic pressure has forced more efficient methods in milk marketing. Consolidation of distributing agencies has been one way of meeting the pressure for greater effiiciency. Since 1923 a significant number of Chicago dealers have either discontinued their business or have merged with others. This movement toward centralization, providing it does not result in the abuses which monopoly makes possible, decreases overhead expenses and places a larger part of milk marketing under the control of more efficient management.[84]

In the bulletin no effort was made to pass judgment on the fairness of the distribution of the consumer's money among those who produce, transport, process, and deliver milk to the consumer. The general picture that was drawn tended, however, to impress upon the dairyman the idea that competition among farmers, each seeking the more profitable lines of production and methods of marketing, is a dominant factor in determining what the farmer receives for the milk he delivers. Milk bargaining associations were discussed briefly, but the net gain to the farmer resulting from efforts of the bargaining agency was not indicated. The association at Peoria was mentioned as having been able to "render a very valuable service to milk marketing in that particular section."[85]

Of the three studies of grain marketing made at Illinois during the eight-year period under consideration (1925–32), one published in 1927 undertook to provide the farmer with facts that would help

[84] C. A. Brown, "Costs and Margins and Other Related Factors in the Distribution of Fluid Milk in Four Illinois Market Areas," Illinois Agr. Exp. Sta. *Bulletin* 318 (Urbana, 1928), pp. 271–72.

[85] Brown, "Factors," p. 191.

him decide upon "the best time to sell corn."[86] That bulletin dealt entirely with shrinkage and the various elements of cost involved in storing corn. The second of those bulletins dealt with market channels, but followed the grain only to the point of consignment by the local elevator.[87] The findings were summarized:

> The corn, oats, and wheat marketed in Illinois move to many points in response to forces of market gravitation.
>
> This study is based on records showing destinations of grain shipped from 350 elevators from July, 1923, to June, 1925, and from about 175 elevators from July, 1925, to June, 1926. The outstanding things revealed are: a large number of important markets, a varying importance of these markets for shipments from various parts of the state, and shifts in relative importance indicated in some areas from year to year. Two major channels are shown for the movement of corn, one to the north and east, largely tho not entirely thru Chicago, and one to local milling cities. An outlet of less importance was toward the south. Two important movements of oats are indicated, one to the north and east, largely thru Chicago, the other to the south in part direct and in part thru intermediate markets of which St. Louis is most important. Hard wheat went chiefly to Chicago, while soft wheat moved toward the south.
>
> From the northern part of the state Chicago was the leading market, from the southern, St. Louis, and from the western, Peoria. Over large areas, conditions are indicated to be quite competitive.
>
> The chief factors explaining this distribution are freight rates and the outlets of the various markets. One outstanding feature of the grain rate structure is the very large area in the heavy grain marketing districts which has a uniform rate to Chicago. Another is the large area in the central part of the state where rates are competitive between Chicago and St. Louis as well as between smaller markets including Indianapolis. While competitive conditions exist thruout the state, except in the territory in the immediate vicinity of a market, competition is particularly keen in the central district. The effect is to make market outlets highly dynamic. Small fractions of a cent turn the direction of the movement at many points. This tendency is more pronounced in the southern than in the northern portion of the state.
>
> Chicago, being located on Lake Michigan, has some advantage in shipping to the east. From 1923 to 1926 about two-thirds of the wheat, one-third of the corn, and slightly less than one-fifth of the oats shipments were routed over the lake. These quantities are much larger than those that were moved by the Mississippi Barge Line south from St. Louis and Cairo to New Orleans. . . .
>
> Both farmers' and privately owned elevators used a wide variety of markets, and there were no very marked differences in them in this respect. There was some tendency for the privately owned elevators to distribute their shipments of corn more widely and to use large primary markets less than did the farmers' elevators.[88]

The third of the grain marketing series dealt with seasonal aspects of grain marketing.[89] The material was obtained from the elevator companies, partly from company books and partly through question-

[86] L. F. Rickey, "Cost of Storing Corn on the Farm," Illinois Agr. Exp. Sta. *Bulletin* 295 (Urbana, 1927), p. 3.

[87] C. L. Stewart, L. J. Norton, and L. F. Rickey, "Market Destinations of Illinois Grain," Illinois Agr. Exp. Sta. *Bulletin* 315 (Urbana, 1928).

[88] Stewart, *et al.*, *"Destinations,"* pp. 98–99.

[89] L. J. Norton and C. L. Stewart, "Seasonal Features of Illinois Grain Marketing," Illinois Agr. Exp. Sta. *Bulletin* 324 (Urbana, 1929).

naires. The authors showed that while wheat was largely marketed in July and August, corn and oats were marketed rather evenly throughout the year.[90] Parallel with the study of the time of year grain is shipped from the country elevators was a study of price trends.

> Typically, wheat prices have advanced from August to February and then declined. . . .
>
> Attempts to analyze the seasonal variation in corn prices are complicated by changes in grade. . . . From 1899 to 1913 the August price averaged 14 cents higher than in the previous December. The seasonal variation for the period 1920–1927 has been less marked. Altho there was an average increase of 12 cents between December and August, there have been wide variations between the individual years which make up this average.
>
> Seasonal variations in the price of oats have been typically small, and before the war were rather uniform from one year to the next. The average changes in price within the year indicate that storage space must be available at low cost in order to make the storage of oats profitable.[91]

Three bulletins on livestock marketing related to the adjustment of hog production to market demand, to co-operative livestock shipping associations, and to livestock trucking rates.[92] The first bulletin showed the fluctuations of hog prices and discussed the causes with special emphasis upon the corn-hog price ratio. It was stated "that there is a periodic shifting up and down in the supply and price of hogs about every 15 to 18 months." This, it was said, "indicates that the majority of farmers respond to current market conditions rather than to those that are likely to prevail when their hogs are ready for market."[93] The author recommended that in addition to producing efficiently the farmer should:

1. Adjust his production from year to year according to the outlook for hog prices rather than be influenced too much by past prices or by prices prevailing at time of breeding.
2. Take into account changes from year to year in price relationships between hogs and other enterprises such as cattle, sheep, corn, etc., and select from the alternative lines of production one or more which give promise of yielding the greatest net return to the farm business as a whole.
3. Sell hogs, in so far as costs and prices justify, in those months when hog prices usually are highest.
4. Vary the weight to which hogs are fed out and marketed according to the relationship between corn and hog prices.[94]

R. C. Ashby's bulletin on co-operative livestock shipping discussed the practices and problems of the 434 livestock shipping associations in Illinois which shipped 25,950 cars of livestock worth approximately $45,000,000 in 1925. Ashby concluded:

> Valuable service has been rendered by cooperative livestock shipping

[90] Norton and Stewart, "Seasonal Features," pp. 4, 13.
[91] Norton and Stewart, "Seasonal Features," pp. 38–39.
[92] F. F. Elliott, "Adjusting Hog Production to Market Demand," Illinois Agr. Exp. Sta. *Bulletin* 293 (Urbana, 1927);
R. C. Ashby, "Practices and Problems of Cooperative Livestock Shipping Associations in Illinois," Illinois Agr. Exp. Sta. *Bulletin* 331 (Urbana, 1929); and
R. C. Ashby, "Livestock Truckage Rates in Illinois," Illinois Agr. Exp. Sta. *Bulletin* 342 (Urbana, 1930).
[93] Elliott, "Adjusting Hog Production," p. 533.
[94] Elliott, "Adjusting Hog Production," p. 546.

associations. There is opportunity for continued service of equal or greater usefulness. If the farmer wishes to delegate his livestock marketing to other interests, local associations are not needed; but if he prefers to have a voice in the selling as well as the production of his livestock, strong local associations furnish a sound basis for developing such control.[95]

In 1930 Ashby issued a bulletin which showed the rapid increase in the numbers of livestock trucked to the packing centers.[96] An interesting fact reported was that truckage rates were much higher than rail rates:

> On the basis of the 1927 truckage and freight rates, the apparent net savings possible in marketing livestock by rail instead of by truck would have been 34.4 cents a head. For the 136,307 head included in this study, this would have meant a total saving of $46,952. On all Illinois livestock trucked to these three markets in 1927 (1,115,606 head), a total of $400,763 would have been saved by shipping by rail.
>
> In calculating net marketing expense by rail 10 cents a hundredweight was allowed for trucking from farm to market and 10 cents a hundredweight for shipping association home expense. . . .
>
> The bulk of the truck shipments included in this study moved less than 50 miles. Truck consignments came from greater distances to East St. Louis and Chicago than to Peoria. . . .
>
> Trucking is appealing to more and more stockmen. The number of livestock trucked to the three Illinois markets included in this study increased from 1,726,918 in 1928 to 2,344,416 in 1929, or by 35 percent. Two main reasons for the growing use of this method of transportation appear to be convenience and greater flexibility of movement, since in the majority of cases the actual cost of truckage is materially higher than shipment by rail. The problem of necessary adjustments between truck and rail transportation is a basic one, and a study such as this suggests that the best service is not necessarily truckage all the way from farm to market but that it may be a combination of truck and rail.[97]

The bulletin presented many facts but failed to answer the question as to why farmers used the more expensive form of transportation.

Four Illinois fruit marketing studies were made by J. W. Lloyd and H. M. Newell. The first of this series was issued in 1928 and told the story of the marketing of the Calhoun County apple crop.[98] Calhoun County, the greatest apple producing county in the state, is a narrow strip of land lying between the Mississippi and the Illinois rivers. The bulletin described methods of grading and packing the Calhoun County apple crop, discussed shipping facilities, storage facilities, and methods of sale. Apple prices were studied and margins between harvest and storage sales recorded. Fourteen recommendations were made as to means of improving the packing and marketing of the crop. The recommendations, other than those of a physical nature, related to widening the distribution and more direct ship-

[95] Ashby, "Practices and Problems," p. 371.
[96] Ashby, "Truckage Rates."
[97] Ashby, "Truckage Rates," pp. 165–66.
[98] J. W. Lloyd and H. M. Newell, "Marketing Calhoun County Apples," Illinois Agr. Exp. Sta. *Bulletin* 312 (Urbana, 1928).

ments, making marketing arrangements considerably in advance of harvest, and making and maintaining contacts with marketing agencies. The other three bulletins all related to fruit in transit.[99] They dealt largely with the physical and biological aspects of the preparation for, and the management of, fruit or vegetables during shipment, all of which has much to do with determining the value of the product when it reaches the market.

The farther the research in marketing reached over from the concrete aspects of the problem in which the kinds and qualities of products desired in the market were described to the study of the economic forces which determine prices, the more difficult it seemed to be to interpret the facts in a manner to give practical guidance to the farmer. This was recognized at Illinois. The authors of the bulletin on a trade area made the comment:

> The collection of facts concerning a rural-urban situation is one thing. The interpretation of the facts in a manner best calculated to point the way to a proper and logical development of the area studied, is quite another thing. The facts as such are valuable; their interpretation is much more valuable.[100]

In most of the bulletins on agricultural marketing in the series mentioned above, the Illinois research workers took the price and market situation as they found it and devoted themselves to finding out how the farmer needed to conduct his business with a view to obtaining the best returns for his efforts when his product reached the market. Even in the bulletins on price trends the effort was obviously to improve the farmer's vision of the market for which he was producing. In the trade area study, suggestions were made with regard to the education of the consumer in a manner to affect the demand:

> . . . An extension project entitled "Food and Nutrition," developed by the University of Illinois and emphasizing the proper selection of food for health and nutrition, gives prominent place to milk, but this project reaches only a few urban families. Such a project, however, might well be the basis for a general educational campaign in city, as well as in country, for a greater use of milk, since an improved demand for any food product will become effective only in so far as the individual consumers demand the product.[101]

When the work in marketing at the Illinois Agricultural Experiment Station is brought into review along with the work in other institutions, it is to be noted that the Illinois work in the 1900's stood almost alone; that from 1910 to 1925, while marketing studies were making considerable progress in other states, little was done at

[99] J. W. Lloyd and H. M. Newell, "Observations on the Refrigeration of Some Illinois Fruits in Transit," Illinois Agr. Exp. Sta. *Bulletin* 334 (Urbana, 1929);
J. W. Lloyd and H. M. Newell, "Some Factors Influencing the Keeping Quality of Fruit in Transit," Illinois Agr. Exp. Sta. *Bulletin* 350 (Urbana, 1930); and
J. W. Lloyd and H. M. Newell, "Causes of Damage to Fruits and Vegetables During Shipment," Illinois Agr. Exp. Sta. *Bulletin* 379 (Urbana, 1932).

[100] H. W. Mumford, C. L. Stewart, H. C. M. Case, and P. E. Johnston, "Developmental Study of a Rural-Urban Trade Area," Illinois Agr. Exp. Sta. *Bulletin* 326 (Urbana, 1929), p. 185.

[101] Mumford, *et al.*, "Developmental Study," p. 167.

Illinois. But from 1925 to 1932 Illinois was again making a creditable showing in spite of the fact that there was lacking a department organization to give a setting for the Work. The success of the work after 1925 was doubtless due to the fact that Dean Mumford took the economic work of the College of Agriculture under his own guidance and essentially served as leader and co-ordinator of the work of an economic character, which was scattered through the various departments of the college. It was in 1932 that Mumford was in a position to consolidate the economic work of the college into a department of agricultural economics.

Michigan

How Michigan producers could get increased profits out of cash crops was one of the problems attacked by the Michigan Experiment Station as well as by almost every other experiment station in the country. J. T. Horner's studies of marketing potatoes and milk are representative contributions. In the potato bulletin he asserted that "Michigan potato growers can best be assured of a profit out of their business by knowing what the markets want; producing this type of potatoes at a cost lower than competitors in other states, and marketing more efficiently than competitors."[102] The areas of production and the initial destination of carlot shipments were graphically shown. Farmers were urged to learn more about price determining factors:

> . . . Under normal conditions the natural market for Michigan potatoes does not extend much east of central Pennsylvania nor west of Indiana. . . .
>
> The territory to which potatoes are shipped extends farther east than the preferential freight territory. This is because of the great consuming power of the New York City and adjacent markets. Potatoes produced in New York and Pennsylvania go to these eastern markets rather than west to such points as Pittsburgh and Cleveland. Pittsburgh and Cleveland are, from the freight standpoint, New York and Pennsylvania markets; but the attractive market in and around New York City causes shipments from these regions to the West to be very slight except in times of a large crop and keen competition. . . .[103]
>
> Farmers are always going to feel that prices are not just until they learn more about the price determining factors. Many attempts have been made to bring about changes in prices without any knowledge as to what makes price. During the past few years we have had many panaceas offered to the farmer which were later found to be of no value. Remedies cannot be applied unless the ailment is known. . . .
>
> The price which the farmer is paid for his potatoes at the local country shipping point is based upon what the buyer estimates he can sell them for at some future time. Since the late potato crop is more than sufficient to supply the immediate consumption needs, a great portion of it must be held over for a later market. Michigan potatoes are sold as late as June. The price in the fall depends, to a great extent, upon what the buyer or the producer estimates potatoes will sell for in the spring. . . .
>
> During the past few years much has been said about the possibility of increasing prices to farmers by Orderly Marketing. This term when properly

[102] J. T. Horner, "Marketing Michigan Potatoes," Michigan Agr. Exp. Sta. *Special Bulletin* 137 (East Lansing, 1925), p. 32.
[103] Horner, "Potatoes," pp. 21–22.

understood means selling produce in accordance with the demands of the market. Many persons have failed to understand the possibilities and limitations of this practice and have thought it possible to "dictate" the price at which a farm product was to sell by regulating the flow of goods to market. . . .

While marketing should be at such a rate as not to over-tax the marketing machinery and to maintain the "suction of demand," it should not be inferred that the price level during any season can be materially raised above what is justified by the basic condition of the market.[104]

In his study of the Detroit milk market, Horner found conditions chaotic and, after a careful analysis of the facts, presented a plan of reorganization which would unify the sales by farmers to distributors, handle most of the surplus in county plants more remote from the city, and provide an adequate supply to city consumers at all times. The interest of producers, distributors, and consumers were taken into account. Among other things, Horner recommended:

That, better cows and better dairy management be one of the major projects of the association and that it act in close co-operation with the Dairy Department of the State College in this work.

That, the difference between the retail wagon and wholesale store prices charged by distributors be reduced.

That, the distributor's spread be reduced.

That, distributors discontinue wasteful competitive practices.

That, the public actively support a movement toward combination of or agreement between distributors to reduce competitive wastes.

That, the public be represented at all meetings where matters of market policies are considered.[105]

The apple growers of Michigan needed help. They were under the necessity of seeking a market outside the state because apples from other states were preferred by Michigan people. H. P. Gaston made a careful study of consumer demand for apples in order to find out why Michigan folk preferred apples from Washington and New York, and with a view to helping Michigan farmers to compete more successfully in the home market. The farmers were told pointedly that to meet the demands of the Detroit consumer better quality of apples, better standardization, and a continuous supply of a given variety in a standardized pack would be necessary. The author stated that if the growers "could and would alter cultural practices so as to increase the size and color of the fruit now placed on the market, the ultimate Michigan consumer would be reasonably well satisfied with the Michigan product."[106] Moreover, the author stated that the grower must satisfy the retailer who demanded few varieties of uniformly graded apples in convenient packages.

Bean marketing in Michigan was handicapped by weaknesses in price-making methods. A comprehensive study of all phases of the

[104] Horner, "Potatoes," pp. 25, 27, 28.

[105] J. T. Horner, "The Detroit Milk Market," Michigan Agr. Exp. Sta. *Special Bulletin* 170 (East Lansing, 1928), p. 61.

[106] H. P. Gaston, "Consumer Demand for Apples in Michigan," Michigan Agr. Exp. Sta. *Special Bulletin* 209 (East Lansing, 1931), p. 43.

subject was made by W. O. Hedrick. His bulletin[107] was largely descriptive, but under "observations" Hedrick gave his own ideas that grew out of his close study of the subject. These ideas relate primarily to price-making methods and are contained in brief form in the following excerpts:

> The price making methods in Michigan bean marketing are doubtless the weakest features of the system by which this product is moved from the grower to the consumer. . . .
>
> The modern marketing apparatus by which prices are made for other farm products, organized exchanges for the staples, collective bargaining agencies for fluid milk, and auction markets for many fruits and vegetables are nowhere to be found in bean marketing. In marketing beans, the buyer and seller make a strictly private bargain in each transaction, and momentary conditions with regard to supply and demand weigh heavily in arriving at a conclusion. Such price publicity, even, as comes from the market news service of the Department of Agriculture, is denied beans, since these reports fail to include bean prices in their daily quotations. . . .
>
> The chief bit of constructive work in bean marketing, thus far done towards a more effective price mechanism is the jobber's market price scheme, from which daily bean market prices are reported. . . .
>
> The well entrenched public policy of the country, namely, "that commodity prices should be regulated by free competition," is the accepted rule of action in bean marketing. Indeed, the loyalty of bean dealers to the practice of competition is most complete, and pervades all parts of the industry—a practice close to the struggle for existence in many cases. This time honored policy works fairly well, apparently, among the bean growers and dealers within the State, itself, so far as bean prices are concerned. Here, within the small area of the bean region, where all classes, farmers, elevator managers, and jobbers, are known to each other and are in easy contact through phone and good roads and where daily news about bean conditions is quickly spread, competition, as to bean prices, is not without merit. In fact, the proper price share of the season's crop falls to the classes of bean dealers and growers in Michigan with a fair degree of justice, it would seem, under these conditions of practicable and intelligent competition. . . . The sale of beans to the trade, outside the State, is where the competitive price system shows its worst features, and the effects are felt by all classes.
>
> The peculiar and individual features of bean marketing must be considered, also, in trying to account for bean price evils. The first of these is the large-scale buying of the big canners which, as was shown before, may play havoc at times with a smooth running bean market. . . .
>
> The Michigan bean marketing system faces still another obstacle to the improvement of price making methods, through the fact of the copious direct marketing of beans, i. e., marketing, directly, from local elevators to city merchants without use of middlemen, which takes place. Bean marketing in Michigan suffers, in fact, through its advantages. The close proximity of the bean region to the large city markets, like those of Detroit and Chicago, causes much direct marketing of beans, and good roads and the motor truck promise a greater use of this method in the future. Any plan for bettering the wholesale methods of marketing beans must reckon with this sort of rivalry which often has hindered the cooperative marketing of products by growers, in this and other states.[108]

[107] W. O. Hedrick, "Marketing Michigan Beans," Michigan Agr. Exp. Sta. *Special Bulletin* 217 (East Lansing, 1931).

[108] Hedrick, "Beans," pp. 79–81.

A descriptive report on the stage of the development of the motor truck method of marketing fruits and vegetables in Michigan was made in 1932.[109] Eighty per cent of the fruits and vegetables of the southwestern part of the state were marketed by motor truck. The typical fruit and vegetable trucker:

> . . . buys about 48 per cent of his tonnage at farms, 48 per cent at public markets, and four per cent elsewhere. If he handles fruits and vegetables, he generally sells about 33 per cent of his tonnage to grocers and restaurant operators, 25 per cent to jobbers, 20 per cent to hucksters, 20 per cent to consumers, and the balance to chain stores and other truckers; if he trucks potatoes only, he usually sells almost 70 per cent to grocers and restaurant operators, only two per cent to jobbers, 10 per cent to hucksters, 15 to 20 per cent to consumers, and the balance to chain stores and other truckers.[110]

The author suggests that the trucker may reduce the cost of marketing by reducing the number of middlemen.

Pennsylvania

While the University of Pennsylvania showed an early interest in broad questions relating to agricultural marketing and prices, the agricultural experiment station of the Pennsylvania State College took up the subject much later but in a more concrete way.

R. W. Bartlett made a series of studies on marketing milk and cream. Three were made at the Pennsylvania Agricultural Experiment Station. The one dealing with the marketing of fluid milk in the Pittsburgh, Philadelphia, and New York City markets was made with a view to determining "some basic economic principles for marketing milk."[111] His approach to the problem is set forth:

> Big scale production and big scale marketing are key factors in our present-day industry. During the past two years, many milk distributing companies have consolidated. . . . this emphasizes more than ever the necessity for producers' organizations, in order to maintain equality of bargaining power between producers and distributors. . . .
>
> Milk marketing organizations are of two types: (1) Cooperative collective bargaining associations, which sell their members' entire milk production like a broker, and (2) the cooperative marketing associations, which, besides selling their members' products, also carry the products through some further stage of merchandising.
>
> Members of a cooperative collective bargaining association receive their checks directly from milk distributors. The price received per hundredweight of milk is, however, determined by negotiation of representatives of the marketing association and the milk distributors. The Interstate Milk Producers' Association of Philadelphia is an example of a collective bargaining association.
>
> The cooperative milk marketing association goes further in the marketing process. The Dairymen's League Cooperative Association of New York is an

[109] G. N. Motts, "Motor Truck Marketing of Michigan Fruits and Vegetables," Michigan Agr. Exp. Sta. *Special Bulletin* 227 (East Lansing, 1932).

[110] Motts, "Motor Truck," p. 45.

[111] R. W. Bartlett, "Milk Marketing in Pennsylvania," Pennsylvania Agr. Exp. Sta. *Bulletin* 208 (State College, 1926), p. 5. Continued in *Bulletin* 251.

example of such an organization. For the sale of part of the milk, it functions like a collective bargaining association—selling this product to distributors who receive it directly from the farmers. However, the association receives and processes the other part of the milk, selling some wholesale in the city markets and manufacturing the remainder at its country plants. The marketing association of this type returns to its producers the distributors' payments, together with receipts from milk manufactured.

Another type of cooperative milk marketing association carries out the entire marketing process. It receives, processes, and distributes the milk supplied by its members. Proceeds are distributed on proportionate volume subject to fat and other differentials after deducting expenses. Since these distributing organizations carry out the entire marketing process, they do not function as collective bargainers. Pennsylvania cooperatives, such as those at Greenville, Kane, Connellsville, and other small markets, are examples of this type. . . .[112]

Since production costs in dairy regions are lower in summer, payment of the same price for milk throughout the year would return greater net profits to milk producers in summer than in winter. The fluid milk trade, however, demands year-round production. . . . The most effective and equitable way to control milk production has seemed to be through increase or decrease of net profits to each producer by means of price adjustments.

Two ways of changing milk production through price are: (1) by a frequent (often monthly) raising or lowering of the price paid to producers and (2) by payment of a price to each producer for his basic volume throughout a 12-month period, and a lower price or prices for all production over (and in some cases, *under*) this basic production. . . .

Payment of a lower price to each producer, for all production over or under a basic volume, gives him an incentive to effect a more uniform production. There is a year-round demand for fluid milk. Hence, milk used in that form usually returns a higher price than when it is used for cream or in manufactured products. The producer receives one price for his "basic" production and a lower price for his production over or under this basic volume which tends to make returns for his contribution of value proportionate to the total contribution of value. Since a large part of the milk for which a lower price is paid goes into cream, or into manufactured products, it is relatively less valuable than the milk used in fluid form.

Formerly, producers of milk that was used entirely in the manufacture of butter and cheese were paid the price received for these products. Since prices for these products were quoted regularly in several markets, they afforded a definite standard for the price paid to producers. With the advent of the fluid milk demand, this definite standard was substituted for a "one-price" system which allowed no collective bargaining on the price of milk, based upon its various uses. Following this, the classification method of selling milk to distributors based upon its estimated value in different uses has been evolved. . . .

Milk markets are losing their former independence because of the (1) overlapping of territories tributary to these markets; (2) consolidation of milk distributing companies, and (3) improved transportation facilities.

Thus, about two-thirds of the milk supply for the Pittsburgh market originates in northeastern Ohio, an area for which the Cleveland market is a strong competitor. Crop-growing competes with dairying for labor and land in the southeastern Pennsylvania area, tributary to the Philadelphia market, while milk produced on the northern boundary of this area is consumed locally or flows to the New York market. The New York market

[112] Bartlett, "Milk," pp. 7–8.

has been drawing more heavily each year upon northeastern Pennsylvania for its milk supply.

Milk purchased by consolidated companies distributing this product in several markets will eventually be used to their greatest economic advantage. Intershipment, or diversion of some milk from one market to another, is a logical development toward such economic use. . . .

Transportation by trucks hauling cans or by tank trucks simplifies the diversion of milk from one market to another. . . .

. . . The principle of obtaining payments from distributors for value contributed by producers and distributing these payments to them based upon each producer's proportionate contribution of value is more easily stated than fully applied.[113]

Many milk producers complain of the small share of the retail price which they get. . . . While the milk producer has a remote interest in the spread between producer and consumer prices, his most vital concern is that he be paid a price which represents a fair return for the value represented in his product.[114]

Bartlett then, with W. E. Gregg, made an economic analysis of shipping station operations.[115] That study pointed out that the basic reason for the existence of such stations was cooling the milk to preserve its quality.

He then continued his study of milk marketing by discussing the various price plans in use, and elucidating the Pittsburgh equalizing price plan.[116] Under that plan the effort was to pay for milk according to its value in the use to which it was put (fluid milk, cream, butter). The proceeds were distributed to the farmers according to use and according to each producer's basic quantity[117] rather than on an average pool price. The producer's base was determined by his proportionate contribution to the fluid milk supply in the months of October, November, and December.

Two other Pennsylvania bulletins relating to milk marketing dealt with special phases of the subject. One was a study of the influence of the basic surplus plan used in the Philadelphia market upon the evenness of production throughout the year.[118] The amount of pasture land and type of farming seemed to determine how much influence the basic-surplus plan had.

During the first five years in which the basic-surplus plan of payment was in operation in the Philadelphia milk shed seasonal production was "evened up." During this period there was a shift toward the production of proportionately more winter milk. In 1925, the seasonal variation in milk production was 31 per cent less than in 1921. . . .

Many individuals attempted to adjust production so that they would have little or no surplus. . . .

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[113] Bartlett, "Milk," pp. 31–36.
[114] Bartlett, "Milk," p. 3.
[115] R. W. Bartlett and W. E. Gregg, "Milk Marketing in Pennsylvania," Pennsylvania Agr. Exp. Sta. *Bulletin* 219 (State College, 1928).
[116] R. W. Bartlett, "A Price Plan for Selling Milk by Collective Bargaining Organizations," Pennsylvania Agr. Exp. Sta. *Bulletin* 251 (State College, 1930). Largely a continuation of *Bulletin* 208.
[117] Bartlett, "Collective Bargaining," p. 26.
[118] F. F. Lininger, "The Relation of the Basic-Surplus Marketing Plan to Milk Production in the Philadelphia Milk Shed," Pennsylvania Agr. Exp. Sta. *Bulletin* 231 (State College, 1928).

Some farmers with considerable pasture produced more summer milk and less winter milk in 1925 than in 1921. . . .

Milk production cannot always be adjusted to the demands of the fluid milk market at the same cost on all types of farms. The basic-surplus plan is well adapted to crop farms with little pasture, where winter dairying is an important source of income. On these farms, it is profitable to produce a basic amount approximately equivalent to production in the summer months. However, on farms having a large amount of permanent pasture which can be most profitably utilized by summer dairying, it is not good practice to attempt to establish a basic amount so high that there will be no surplus milk in the ensuing months.

In the Philadelphia milk shed the greater proportion of farms have little permanent pasture. On these, rather uniform monthly production of milk is consistent with good dairy farm management. Consequently, with the market opportunities existing there, the territory is well-suited from the production standpoint to the use of the basic-surplus plan. While farmers had tended previously to increase the production of winter milk, the adoption of this plan was the final step necessary to bring about a fairly close adjustment of supply to fluid milk demand.[119]

Another bulletin specialized on the membership problems in milk marketing organizations.[120]

F. F. Lininger's study of egg marketing, issued in 1927, showed that in Pennsylvania:

. . . There were 15 different types of buyers reported, and 29 different ways of selling. Producers sold to buyers in one or more of three ways: (1) at the farm, (2) delivered to buyer, and (3) shipped by express or parcel post. . . . only four methods could be selected which were used by enough producers and on which data were available so that detailed comparisons of prices received and costs of marketing to the producer coud be made. . . .

. . . Approximately 1 out of 5 producers sold direct to consumers, 1 out of 5 sold to hucksters, 1 out of 5 shipped to distant city wholesalers, and 1 out of 8 sold to country stores. . . .

Farmers selling direct to consumers received the highest prices throughout the year—12 cents above country store prices, 11 cents above huckster prices, and 8 cents above New York wholesaler prices. . . .

The average cost to the producer of marketing a dozen eggs was .58 cents when sold to hucksters; 1.86 cents, to country stores; 4.30 cents, direct to consumers, and 4.74 cents to New York wholesalers. For farmers who sold direct to consumers, 2.25 cents per dozen, or 52 per cent of the total marketing cost, was for time spent on trips—not a cash outlay cost. For farmers shipping to New York wholesalers, 2.31 cents per dozen, or 49 per cent of the total marketing cost was for express or parcel post—a cash outlay cost.[121]

The next year a bulletin on egg and poultry consumption gave additional light on the outlet for poultry products from Pennsylvania farms:

In order to supply information relative to the demand for eggs and poultry, and to determine some of the various factors affecting this demand, survey records were taken from families in six cities of Pennsylvania. The Philadelphia and Pittsburgh wholesale markets were visited and actual

[119] Lininger, "Basic-Surplus," pp. 62–63.

[120] J. K. Stern, "Membership Problems in a Milk Marketing Organization," Pennsylvania Agr. Exp. Sta. *Bulletin* 256 (State College, 1930).

[121] F. F. Lininger, "Egg Marketing by Farmers in Pennsylvania," Pennsylvania Agr. Exp. Sta. *Bulletin* 214 (State College, 1927), pp. 4–5, 17.

candling records obtained indicating the quantity of the supply in these markets. The results of the consumer demand survey are presented in the first part of this study. Some indication of the quality of the supply that flows to satisfy the demand for poultry products in Philadelphia and Pittsburgh is reported in the second part.[122]

Eggs and poultry were bought direct from farmers by more than half of the families interviewed in York, Williamsport, Pottsville, and Uniontown.

There is a demand in Pennsylvania cities for more eggs than are produced within the state, and producers who are selling direct to consumers are supplying the most satisfactory product.

Fifty-five per cent of the egg receipts and 71 per cent of the dressed poultry receipts in Philadelphia for 1922–26 originated in seven states of the Middle West.

Eggs of more uniform quality were received in Pittsburgh and Philadelphia from the Middle West than from Pennsylvania and near-by states.[123]

After the egg marketing studies, Lininger prepared a bulletin on potato marketing.[124] He treated the subject in general terms with special reference to the differences in costs and in prices received when potatoes were marketed by different methods. The study showed that in Pennsylvania:

. . . local markets offer the best opportunity. Other markets within trucking distance afford good outlets at higher returns to the grower than large city markets, where keen competition from other potato-producing regions is encountered. . . .

Net prices to growers (gross prices less marketing costs incurred by growers) were 57 cents per bushel on potatoes trucked to market and 44 cents on potatoes shipped by rail. Sales to consumers at the farm returned the highest net prices to growers, 80 cents per bushel.

. . . Prices in surplus counties were lower, in all methods of sale, than prices in deficit counties. Rail shipments were made chiefly from surplus counties.[125]

The sale by farmers of potatoes in 15-pound sacks was treated by Lininger, and that subject became the theme of Cowden's study[126] which showed that the method sometimes paid.

When potatoes were sold in 15-pound cloth bags, 15.66 cents per bushel were added to the marketing cost, as compared with marketing in 120-pound sacks. . . .

The quality of potatoes marketed in 15-pound sacks must be high. . . .

The retail grocery store was the best outlet. The 15-pound sacks met a demand from a small percentage of the trade for a good quality potato in a convenient package. The attitude of the merchant toward the small package had much to do with its success.

It was the opinion of 21 of the 45 growers included in this experiment that the small sack is not practical.

Before investing any capital in equipment for marketing potatoes in 15-pound sacks, the farmer should study his market. He should have a trade

[122] F. F. Lininger and T. B. Charles, "A Study of Egg and Poultry Consumption in Pennsylvania," Pennsylvania Agr. Exp. Sta. *Bulletin* 222 (State College, 1928), p. 3.

[123] Lininger and Charles, "Egg and Poultry Consumption," p. 23.

[124] F. F. Lininger, "Potato Marketing in Pennsylvania," Pennsylvania Agr. Exp. Sta. *Bulletin* 278 (State College, 1932).

[125] Lininger, "Potato," p. 4.

[126] T. K. Cowden, "Marketing Pennsylvania Potatoes in Fifteen-Pound Containers," Pennsylvania Agr. Exp. Sta. *Bulletin* 281 (State College, 1932).

that will pay a premium for quality. He should be able to service his outlets with small deliveries from time to time without much added expense. The successful marketing of potatoes in special packages also requires considerable sales ability.

Marketing potatoes in 15-pound containers appears to offer little advantage to the Pennsylvania potato industry. . . . A few growers may be able to use this special package advantageously in their marketing program. A limited market exists for a good quality potato in a consumer-size package. The grower must find a trade that will pay for the service before this method of marketing will be profitable. Thus far, in most cases, the trade has been unwilling to pay the additional price for the bag alone, and also has expected to obtain a superior quality of product in the small package. As long as the small bag serves as a means of identifying quality, it has some advantages.[127]

Indiana

In the late 1920's the Indiana Agricultural Experiment Station gave considerable attention to the marketing problems of Indiana farmers. The general economic philosophy lying behind eleven Indiana studies published from 1927 to 1932 was set forth in a bulletin by Young and Day on prices[128] (see *supra,* pp. 500–501). The following bulletins exemplify the methods and material presented.

In the livestock area, three Indiana bulletins related to the marketing of hogs. The first of these related to producing spring pigs for the September market while summer prices were still high.[129] The study was first of all a production study, but it related to timing the production with a view to obtaining a better price. Only in that sense can it be classed as related to marketing. It belongs to that large number of studies made in the 1920's which had in view the adjustment of production with a view to obtaining better prices.

. . . Pigs farrowed in February and March, if fed a full ration, can be sent to market in September when the market price is normally from one to two dollars higher per 100 pounds than in November and December.

Full-fed pigs showed a greater profit per 100 pounds gain in each of the four years. A higher selling price and lower cost of gain were responsible for this result.[130]

Another study related to deaths and cripples in marketing hogs.[131] That was a practical bulletin on how to feed and bed hogs in transit with a view to reducing losses.

A report on marketing hogs by motor truck stated that, 63.1 per cent of the hogs arriving in the Indianapolis market in 1929, arrived by motor truck, that trucking was more expensive than railroad freight but also more convenient and more flexible.[132] It is a feedlot to market service.

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[127] Cowden, "Fifteen-Pound Containers," p. 19.

[128] E. C. Young and O. A. Day, "Prices of Farm Products in Indiana," Indiana Agr. Exp. Sta. *Bulletin* 320 (Lafayette, 1928), pp. 3–5.

[129] O. G. Lloyd and G. E. Young, "Feeding and Marketing of Early Spring Pigs on Indiana Farms," Indiana Agr. Exp. Sta. *Bulletin* 310 (Lafayette, 1927).

[130] Lloyd and Young, "Spring Pigs," p. 2.

[131] J. R. Wiley, "Death and Crippled Losses in Shipping Hogs to Market," Indiana Agr. Exp. Sta. *Bulletin* 318 (Lafayette, 1927).

[132] J. R. Wiley, "Motor Transportation of Hogs to the Indianapolis Market," Indiana Agr. Exp. Sta. *Bulletin* 337 (Lafayette, 1930).

(See inside front cover.)

Apple marketing was the subject of two studies. The purpose of the first bulletin was to "supply the producer with a knowledge of the market's requirements, and will enable him to meet these requirements in an intelligent manner to the mutual benefit of himself, the dealer and the consumer."[133] A similar bulletin was published three years later. The reason for repeating the study was given:

> In a full crop year such as 1926 Indiana furnished 30–35 per cent of the Indianapolis apple receipts, whereas in 1929 the state furnished only 10–15 per cent of the capital city's apple supply.
>
> The leading source of the apple supply in 1926 was Indiana, followed by the Oregon-Washington Section. In 1929 the Oregon-Washington Section furnished the largest percentage of the total supply, followed by the Potomac-Cumberland-Shenandoah Region, which consists of Virginia, West Virginia, Pennsylvania and Maryland. Michigan has become an important factor in the trucked in or local supply, furnishing 23 per cent of this supply in 1929. . . .
>
> Apples should be packed in tub baskets and graded according to United States grades for apples. The fruit should be sized to one-fourth inch ranges because there is an increasing tendency in preference for sized fruit.
>
> One of the chief objections of the trade toward Indiana apples is the fact that the finish does not compare with that of fruit from some other states. Proper pruning, spraying and other cultural practices should be rigidly followed if Indiana grown apples are to successfully compete with fruit from other states.[134]

California

Most of the work in California relating to marketing has been presented in the section on the agricultural outlook (see *supra,* pp. 469–77) or in the section on agricultural co-operation (see *supra,* pp. 686–91). Additional work by the men at the University of California should be mentioned.

Three of the California bulletins relating to marketing have to do with methods of disposing of burdensome surpluses due to the over-rapid expansion of production. One of those is a study of the various ways of putting more prunes into the diet of American consumers,[135] and two have to do with the marketing of fruit in eastern Asia.[136] A search was made for larger markets in the Orient where half the population of the world resides but by no means half the purchasing power. The resulting bulletin of 366 pages led to the conclusion:

> *The active demand for American fruit in Asia is already supplied. . . .*
>
> *The present export of fruit to Asia has no material influence on the prices farmers receive. . . .*
>
> *In order to perceptibly move prices upward by means of Asiatic export*

[133] H. M. Cleaver, M. R. Cooper, and J. W. Park, "The Indianapolis Apple Market," Indiana Agr. Exp. Sta. *Bulletin* 322 (Lafayette, 1928), p. 4.

[134] F. C. Gaylord and H. M. Cleaver, "The Indianapolis Apple Market: 1929–30 Apple Crop," Indiana Agr. Exp. Sta. *Bulletin* 352 (Lafayette, 1931), p. 2.

[135] E. M. Mrak and W. V. Cruess, "Utilization of Surplus Prunes," California Agr. Exp. Sta. *Bulletin* 483 (Berkeley, 1929).

[136] B. H. Crocheron and W. J. Norton, "Fruit Markets in Eastern Asia," California Agr. Exp. Sta. *Bulletin* 493 (Berkeley, 1930); and E. L. Overholser, "A Study of the Shipment of Fresh Fruits and Vegetables to the Far East," California Agr. Exp. Sta. *Bulletin* 497 (Berkeley, 1930).

it would be necessary to increase present exports by several hundred per cent. . . .

Fresh fruits cannot be sold in Asia in large enough quantities to move prices upward. . . .

Small packages of canned and dried fruits present the best opportunity to make large increases in our present fruit markets in Asia. . . .

By skillful extensive and sustained trade promotion it would be possible to increase several fold the exports of certain fruits to the Far East. . . .

Lower retail prices would increase markets for fruit in Asia. . . .

Even extensive trade promotion, backed by large funds, cannot create in Asia large enough fruit markets to materially help in raising farm prices within the probable duration of the present price depression.

If conducted for a considerable period of time, trade promotion might secure markets in Asia which would be of material assistance in sustaining prices in future years.[137]

In response to the request of a committee of California apple growers, the University of California made a study, the objectives of which were:

. . . to gain a comprehensive view of the methods of marketing apples, to obtain information on market preferences, and to determine possibilities for improvement. The major phase of the study was a survey of principal marketing channels from producer to consumer. . . .

A fundamental consideration in the marketing of apples is a knowledge of individual market preferences with reference to such factors as variety, size, grade, and pack. This study has shown that different markets have distinct preferences in these respects, although most markets were found to have some preferences in common.[138]

Another study made by the University of California upon request of interested citizens was an economic survey of the Los Angeles milk market.[139] The disposition of the surplus beyond fluid milk requirements was one problem especially in mind. The conclusion reached was that no more than a "necessary" minimum of milk surplus should be produced in the Los Angeles area; that under this condition the surplus cannot be handled economically in a surplus plant. It was advocated that "The buying price of milk should be regulated in such a way as to bring the supply into close adjustment with trade requirements for fluid milk, including a margin of 'necessary' surplus."[140] In order that the price of milk may be adjusted in a manner to stimulate just the right amount to meet the demand for fluid milk, an information service is needed. It was therefore recommended:

Some agency should assume the function of collecting and analyzing facts which are essential for the intelligent adjustment of buying prices and wholesale and retail prices of milk and cream. . . . A capable person with economic training and a sympathetic understanding of the problems of both producers and distributors of milk should be employed to carry out this work. In order that the person who occupies this position may have independence of action and close contact with research, educational, and ex-

[137] Crocheron and Norton, "Eastern Asia," pp. 313, 317, 319, 324, 329, 332, 333.

[138] E. A. Stokdyk, H. E. Erdman, C. H. West, and F. W. Allen, "Marketing California Apples," California Agr. Exp. Sta. *Bulletin* 501 (Berkeley, 1930), p. 3.

[139] L. Spencer, "An Economic Survey of the Los Angeles Milk Market," California Agr. Exp. Sta. *Bulletin* 513 (Berkeley, 1931).

[140] Spencer, "Los Angeles Milk," p. 8.

tension agencies, it is suggested that some public institution be asked to cooperate in this project.[141]

It is significant that Spencer, with the experience of the New York Dairyman's League in mind, emphasized adjusting the price so as to stimulate only the amount of milk production essential to meet the demand for fluid milk in the Los Angeles area, rather than upon a price which would equal production costs.

Ohio

Marketing research at the Ohio Agricultural Experiment Station at Wooster was carried on under the supervision of J. I. Falconer of the Agricultural College at Columbus. A background study of the apple industry of Ohio was issued in 1928.[142] Hauck described the Ohio apple industry geographically and noted trends in that industry. Foreign markets were brought into the study as a part of the total picture of the conditions and forces to keep in mind in planning future action in apple production. The study gave an excellent background for the appraisal of current information in the outlook reports relating to profits in the apple industry. Apples represent a small percentage of the value of all crops, 1.1 per cent in 1919, but they made up 45.1 per cent of the total Ohio fruit crop of that year. Ohio people consumed more apples than they produced, which meant better prices than if Ohio were a surplus state. New York and Washington were the principal states from which fruit was imported. The notation was made that "The gross income from the Ohio apple crop had a larger purchasing power in years of large crops and low prices than in years of small crops and high prices."[143]

The following year a bulletin on losses due to injury or death of livestock in transit from the farm to the packing house stated:

> Livestock shippers, managers, and members of cooperative livestock shipping associations, the railroads, and the Livestock Loss Prevention Association of Ohio had evidenced interest in the causes for the heavy loss resulting from dead and crippled animals occurring in livestock marketed from Ohio points. With some cooperatives and some privately owned agencies the amount of this loss was of considerable concern. The Department of Rural Economics cooperated with The Cleveland Union Stockyards Company in securing information which may aid the livestock industry of Ohio in reducing losses.[144]

Causes of loss were set forth:

> More hogs were crippled than either sheep, cattle, or calves. The legs of hogs are not as strong, relatively, as the legs of other species. Most of the crippling of hogs occurred in the hind legs. One method of keeping down crippling is to produce hogs with stronger legs. This, no doubt, means the right kind of feeding, including the proper proportion of minerals. Breeding,

[141] Spencer, "Los Angeles Milk," pp. 7–8.
[142] C. W. Hauck, "The Apple Industry of Ohio," Ohio Agr. Exp. Sta. *Bulletin* 418 (Wooster, 1928).
[143] Hauck, "Apple Industry," p. 44.
[144] G. F. Henning, "Losses in Shipping Ohio Livestock," Ohio Agr. Exp. Sta. *Bulletin* 438 (Wooster, 1929), p. 3.

too, can assist in producing hogs with stronger bone. Hogs, both crippled and dead, showed more seasonal variation than cattle or calves. Dead sheep showed about the same variation as crippled hogs. The winter and spring months were high in death loss of hogs, while the late summer and early autumn months were low. More hogs were crippled during the winter and fewer during August, September, and October. . . .

The single deck was more conductive to losses than the double deck. The principal reason for this was crowding, especially in mixed cars that were partitioned. Many shippers were careless in partitioning. . . .

Most of the partitioned cars were mixed, that is, had two or more species in a car; while the unpartitioned cars were usually straight, having only one species in a car. . . . The results of the study rather clearly favor the shipment of sheep and hogs in straight cars. . . .

The principal agencies sending livestock to Cleveland were cooperatives and livestock buyers. As an average for the year, the livestock buyers had more crippled cattle and hogs and dead cattle, the cooperatives more dead calves, hogs, and sheep and crippled sheep.

No doubt the reason for higher death losses for cooperatives was the practice of shipping out all livestock received for a particular shipping date. Many times this resulted in overloading the cars. On the other hand, buyers often held over some of the livestock purchased until the next shipment and loaded out the cars to the number and weight which in their judgment seemed best. This meant lighter loaded cars with less chance of loss from deaths. . . .

. . . Hogs shipped during the colder months should have warm bedded cars. . . .

. . . During the warmer months, the longer hogs were in transit the higher were the death losses. . . .

Crippling of hogs was very high during cold weather. . . .

Some of the shippers which had heavy losses during the period of the study were interviewed. They told of instances when the livestock was thrown against the ends of the car when the cars were fastened to the train or were being switched. . . .

The engineers of the livestock trains are the seat of the difficulty of rough handling. . . .

Livestock losses . . . can be reduced to some extent by each of several agencies, the livestock producer, the livestock shipper (cooperative and private), and the railroads. To get the greatest amount of reduction requires the cooperation of all of these above named agencies. . . .[145]

Henning also studied transportation in livestock marketing. His report showed a rapid increase during the 1920's in the use of the truck in shipping livestock to the terminal markets.[146]

At both Cleveland and Cincinnati the rates charged were greater than the railroad rates. However, in order to make a fair comparison between rail and truck rates, additional charges must be added to the livestock delivered by rail; for the truck picks the livestock up at the farm and delivers it to the stockyard, whereas that delivered by railroad must be taken from the farm to the railroad shipping point, usually by truck, unloaded, weighed, and yarded, and the railroad car must be bedded, in many cases partitioned, and then the livestock loaded and billed out to a commission firm at the terminal stockyard. . . . This service will cost from

[145] Henning, "Losses," pp. 64–67, 70–71.

[146] G. F. Henning, "The Truck and Its Relationship to Livestock Marketing in Ohio," Ohio Agr. Exp. Sta. *Bulletin* 440 (Wooster, 1929), pp. 5–6.

15 or 20 cents to 35 cents or more per hundredweight. A railroad rate between 40 and 50 miles of 13.5 to 15.5 cents per hundredweight added to the rates for local services, makes the total rate vary from 28 or 35 cents to 48 cents or more per hundredweight. . . . Comparing the amount of 30 to 50 cents for delivering livestock from the farm to market by rail with livestock trucked the entire distance from the 40 to 50 mile zone, the difference between truck and rail was not great at Cincinnati. At Cleveland the truck rates averaged higher and the difference between truck and rail was greater than at Cincinnati.[147]

The terminal market charges were higher on trucked livestock because the numbers per consignment were small. The higher charge:

. . . varied from 50 percent more to more than double the amount charged for rail delivered hogs and lambs. With cattle and calves the rates were approximately the same for straight loads. . . .

. . . The price differences, which were noted by observations on the market, usually were due to condition and fill.[148]

Marketing Ohio wheat was the subject of a descriptive study of the marketing machinery and the disposition of Ohio wheat with special reference to freight rates to the different markets. "Seventy-five per cent of the wheat shipped by 150 Ohio elevators went to points in Ohio."[149] "Toledo and Cincinnati are important terminal markets for Ohio wheat."[150] The great number of flour mills scattered over the state was an important factor in the marketing of the wheat.[151]

C. W. Hauck continued his work on fruits and vegetables by making a study of the marketing of cannery tomatoes on grade in Ohio. The purpose of the study was to assemble adequate information as to "equitable relationship in prices paid for the acceptable grades."[152] That depends upon the quantity and value of the finished product that may be packed from each grade. Adequate information on that point was not available with the result that contract prices for graded tomatoes had shown wide variation.

Experimental work in 1931 indicated that the pack from one ton of U. S. No. 1 tomatoes was worth about $5.00 more than the pack from one ton of U. S. No. 2 tomatoes.

Selling on grade has resulted in larger returns to growers. In 1930 growers received $1.38 more per ton than they would have if the usual flat rate had prevailed. . . .

Graded tomatoes in five factories in 1930 yielded 34.8 per cent canned tomatoes, 18.4 per cent other products, and 46.8 per cent waste. This represented an improvement over the average of the 5 years 1925 to 1929, inclusive, in these same factories, when the yield was 28.0 per cent canned tomatoes, 19.7 per cent other products, and 52.3 per cent waste.

The pack in five factories using grades in 1930 was higher in quality than the average of 1925 to 1929, inclusive, in these same factories. Fancy and Extra Standard canned tomatoes increased from 48.2 per cent of the total

[147] Henning, "The Truck," pp. 20–21.
[148] Henning, "The Truck," p. 25.
[149] L. G. Foster, "Some Factors Affecting the Movement of Ohio Wheat," Ohio Agr. Exp. Sta. *Bulletin* 458 (Wooster, 1930), p. 29.
[150] Foster, "Factors," p. 27.
[151] Foster, "Factors," pp. 27, 36.
[152] C. W. Hauck, "Marketing Cannery Tomatoes on Grade in Ohio," Ohio Agr. Exp. Sta. *Bulletin* 504 (Wooster, 1932), p. 3.

pack to 58.1 per cent, while Standard tomatoes declined from 10.4 per cent to 7.4 per cent, and other products from 41.4 per cent to 34.5 per cent.

The evidence thus far obtained tends to indicate that the marketing of cannery tomatoes on grade and inspection results in: (a) greater returns to growers; (b) lower labor costs and higher net returns to canners; (c) improved quality and larger volume of finished products per ton of raw stock; and (d) more equitable relationships between growers and canners.[153]

The first of the bulletins on market milk was a study of the transformation of southeastern Ohio from a cheese producing to a market milk area.[154] The second was a market analysis of farm sales of milk to dealers in Cincinnati, Dayton, Columbus, and Canton for the years 1925–29.[155] The former bulletin is the story of readjustments in methods of disposing of a farm product in response to a changing market condition resulting from the growth of cities. The latter study had particular reference to the butterfat content of milk and the average daily farm sales by months. Some of the conclusions were:

. . . The average butterfat content of the market's total receipts tends to equal, or slightly exceed, the base test after enough time has elapsed to allow the producers to adjust their herds. . . .

. . . If the [butterfat] differential is above the market value of butterfat, it will tend to raise the test; whereas, if it is below the market value, it will tend to lower the test.

Milk produced by summer dairies averaged higher in test in all markets, except Columbus, than did the milk from winter dairies. . . .

Milk sales of small producers were higher in butterfat content than those of larger producers. . . .

Columbus was the only market studied which had a basic surplus buying plan. The sample from this market had 16 per cent less seasonal variation in milk receipts than Cincinnati, 21 per cent less than Canton, and 14 per cent less than Dayton. Most of this difference in seasonal variation in the Columbus market is, no doubt, due to the basic surplus buying plan. . . .

There is a definite relationship between size of dairies and seasonal variation of receipts within the markets. The small dairies vary most, with a definite decrease in variation to the largest shippers.[156]

Those two bulletins on market milk were clearly a part of Falconer's plan to provide for the farmers of the state the concrete facts in terms of which they might make decisions regarding their production and marketing activities.

Texas

In a sudy of the economics of agriculture in the backland belt of Texas, L. P. Gabbard included a statement on marketing. Generalizing on the subject, he said:

Whatever the system of marketing farm products employed, the interest of two large groups are involved, the producer and consumer. It should be

[153] Hauck, "Tomatoes on Grade," pp. 29, 30.

[154] C. G. McBride, "The Development of Market Milk Areas in Northwestern Ohio," Ohio Agr. Exp. Sta. *Bulletin* 469 (Wooster, 1930).

[155] R. W. Sherman and C. G. McBride, "A Market Analysis of Farm Sales of Milk to Dealers in Four Ohio Cities," Ohio Agr. Exp. Sta. *Bulletin* 498 (Wooster, 1932).

[156] Sherman and McBride, "Farm Sales of Milk to Dealers," pp. 4–6.

the aim of the marketing mechanism, within the bounds of physical and economic limitations, to create an orderly, unobstructed flow of commodities from the one group to the other. The greatest reward such a system may hope for is the margin determined by the economic and not the manipulated forced action of the law of supply and demand. The ideal aimed at is to so adjust the program of production to that of demand that excessive losses and undue fluctuations will be avoided. . . .

False and impossible hopes are too often held out to the farmer from various sources. Quite often the office seeker is extravagant in his promises when soliciting the farmer's support; likewise some of our farmers' organizations have been anything but pessimistic in their effort to induce the farmer to sign on the dotted line. It is not unusual to hear a speaker proclaim that the farmer is entitled to the cost of production plus a reasonable profit. To make an income sufficiently large to cover all costs of production and have a reasonable profit left is a laudable ambition for any farmer, but it is ridiculous to attempt to fix or force a price which will do this for all farmers. Such a philosophy is monopolistic and economically unsound. Instead of bringing the farmer nearer the real solution of his problems it gets him farther away. The more hopeful and possible attitude is that the farmer is entitled to any price he wins through his superior organization both for the growing and merchandising of his product. In this connection it is very much worth his while to know his production costs in so far as he is able to calculate them. Such knowledge should serve him not as a basis for price fixing, but as a basis for more efficient production. At this point it is well to remember that all production is called into existence through the demand of the consumer expressed in price. . . .

Cotton is the chief source of income for the farmers not only of Rockwall County, but of the entire blackland belt. . . .

This means that the problem of marketing in this region is more simple than in those areas of general farming where a considerable variety of products is put on the market. Cotton is a product for which there is a world-wide demand and market. It is classified as non-perishable and does not require any very technical processing before entering the main channels of commerce. The grades are very well fixed and standardized. It is not subject to extreme or very wide local fluctuations in price. The more recent trend has been to make its handling more direct and at the same time to standardize the practices. These facts evidently help to explain the reluctance on the part of cotton growers to unite in a cooperative effort for improving their marketing situation. The absolute necessity has not and does not exist in this crop as it does in the case of those which are more perishable, more limited both as to time and place.[157]

The local method of marketing was then described:

All of the farmers visited with the exception of one sold either through a private local buyer or a local cooperative agency. Out of 497 reporting, 400 sold exclusively through local buyers, 63 sold to local buyers and through their local cooperative agency, and 34 sold through the cooperative alone. Rockwall County is hardly typical in this respect.[158]

Sales were made on the basis of sample or grade but rarely on the basis of staple. The majority of growers did not know how to class and staple their cotton, hence they were at a disadvantage in making a

[157] L. P. Gabbard, "An Agricultural Economic Survey of Rockwall County, Texas," Texas Agr. Exp. Sta. *Bulletin* 327 (College Station, Brazos County, 1925), pp. 118–19.
[158] Gabbard, "Rockwall County," p. 121.

sale. Co-operation in marketing cotton was guardedly recommended. Benefits and obligations of co-operation were enumerated:

First of all, it is very apparent that cooperatively owned and operated associations give profits, if there be any, to those who own and operate them. It is well to observe, however, that profits are not always what the public thinks them to be. . . .

A second immediate benefit of successful cooperative marketing is a reduction of marketing costs. These costs may be reduced by increasing the volume of business, by making marketing mechanism more efficient in the services which it renders, or by both.

A third and very apparent benefit is that which comes through an improvement of services. Specifically these are realized through the development and standardization of grades, selling on the merit of the product, elimination of the speculative motive, by risk spreading, etc.

Some of the ultimate or tangible benefits incident to successful cooperative marketing may be enumerated as the readjustment of production, creating confidence in the marketing system, finding and developing leaders, and enlarging the conception of agriculture. Briefly, a readjustment of production is an organized recognition of marketing conditions and an attempt to direct production accordingly. Confidence in the marketing system is evidenced by a belief in it and a strong conviction that the prices secured by it are the best possible under the conditions. It appreciates the fact that what is put into the marketing machine determines very largely what is to be gotten out of it. Leadership is found and developed through team work, through a democratic policy which is positive and constructive in content. Successful cooperative marketing enlarges the conception and expands the field of agriculture for the farmer. Farming to him is no longer the mere growing of products but includes also the merchandising of these products. It gives greater challenge to his ingenuity and ability by increasing his responsibility, authority, and control in the industry.[159]

Texas economists recognized that the competition of other countries might be an important factor in cotton marketing. The possibilities of Brazilian competition in the production of cotton were presented in 1926 by Bonny Youngblood. Reasons were given:

. . . Brazil probably has more agricultural lands than the United States. Here, cotton growing is restricted to the Southern States; there, it is grown in practically every state. Even under primitive conditions, Brazil secures better average yields per acre than the United States of North America. Her soils and climate seem to be favorable to both quality and quantity production.

There are powerful influences at work encouraging the expansion of cotton growing in Brazil, notably the International Federation of Master Cotton Spinners' and Manufacturers' Associations, and the very commendable efforts of the Brazilians themselves to develop the agriculture of their country.[160]

That forewarning from Texas was apparently overlooked in formulating the cotton policy of the United States under the Farm Board and under the AAA until the rapid expansion of production

[159] Gabbard, "Rockwall County," pp. 125–26.

[160] B. Youngblood, "The Possibilities of Brazil as a Competitor of the United States in Cotton Growing," Texas Agr. Exp. Sta. *Bulletin* 345 (College Station, Brazos County, 1926), p. 56.

in Brazil, under the stimulus of high prices in the world cotton market, became a menacing reality.

In an examination of the local cotton market in Texas, Crawford and Gabbard studied what they considered the chief defect in the sale of cotton by the farmer to the local buyer. The defect was failure to properly reflect central market values in the price paid to the farmer. At a given local market prices tended to conform to the average quality of cotton produced by each community.

> . . . Such a system fails to adequately reward quality as designated by grade, staple, and character; consequently the individual grower is discouraged in his efforts to improve the quality of his product.[161]
>
> . . . In a study of the spread between local prices and central market values grouped according to grade, regardless of staple, it was quite evident that the low grades had been recognized and penalized. The higher grades seemed to have been bought on a flat basis, thus being automatically penalized.
>
> In the case of staple there was no evidence of a conscious effort on the part of the local trade to reward long staple and penalize short staple. Each point seems to have had a staple rating and all cotton regardless of staple length bought on that basis. Such a practice fails to penalize cotton of short staple and to adequately reward cotton of long staple. This was evident in a study of the spread between local prices and central market values on the basis of staple. Thus it is seen that the great bulk of cotton is bought from the farmer, not on a quality basis, but on an *average* basis, and particularly so in regard to staple.
>
> It is quite generally recognized that this method of local buying is encouraging the farmers to plant varieties that will give them the highest yields regardless of staple.[162]

A bulletin on the marketing of vegetables in the Lower Rio Grande Valley was descriptive and gave particular attention to the time of marketing from competing areas. The vegetable growers in the Valley were warned that they "should study the outlook reports on competing areas. The storage cabbage in New York and Wisconsin is grown far enough in advance of the Valley cabbage to enable the Valley growers to adjust their cabbage acreage to meet the demand."[163]

Virginia

The Virginia Agricultural Experiment Station issued three bulletins relating to the marketing of dairy products which describe a situation different from that found in Pennsylvania, New York, Wisconsin, and Minnesota. One of the milk marketing studies related to the fluid milk supply of Richmond; another to Newport News, Petersburg, Lynchburg, and Bristol. Both described the situation in those markets and the problems farmers had to meet. The Richmond study pointed out:

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[161] G. L. Crawford and L. P. Gabbard, "Relation of Farm Prices to Quality of Cotton," Texas Agr. Exp. Sta. *Bulletin* 383 (College Station, Brazos County, 1928), p. 3.

[162] Crawford and Gabbard, "Relation of Farm Prices," pp. 23–24.

[163] G. L. Crawford, "Services, Facilities, and Costs of Marketing Vegetables in the Lower Rio Grande Valley of Texas," Texas Agr. Exp. Sta. *Bulletin* 378 (College Station, Brazos County, 1928), p. 39.

Other whole milk markets are not readily accessible to producers in the Richmond milk territory, and producers should look to the city of Richmond as their market and bear in mind that a production of milk larger than can be taken by the city consumers must be disposed of at prices for milk entering into manufactured products, and that continued increase in production will result in lower average prices paid for whole milk in the area.[164]

In the four smaller cities studied, the dairymen produced and distributed most of the fluid milk consumed. The authors concluded:

Producers are justified in distributing their own milk if dealer-distributors will not pay within 25 cents per gallon of the average resale price of all fluid milk, and if such producers have adequate labor and equipment to give consumers good service and high quality milk at moderate cost without impairing the efficiency of their regular farming operations. Yet there is danger that price wars and price demoralization will result from producer-distribution. Centralized distribution, either through one or two dealer-distributors or through a cooperative distributing plant, offers the advantage of standardized quality, superior service, minimum cost, and stabilized price. When dealer-distributors operate on a reasonably narrow margin they offer the best and cheapest method of marketing fluid milk.[165]

A study of the manufacturing and marketing of dairy products, published in 1931, shows that the production of butter on farms was still important in Virginia.[166] Next to livestock sold or slaughtered, dairy products were the most important source of income in 1929.[167] In 1924, Virginia produced about 28 million pounds of butter, of which less than 4 million pounds were produced in creameries.[168] Creamery butter production was increasing and farm butter production was continuing to decline. Most of the farm butter was made on farms with one, two, or three cows, and more than half of it was sold through country stores. The retail price of farm butter was from 7 to 15 cents per pound below the retail price of creamery butter. Creameries were on the increase, but the author suggested:

Before a creamery is built in any section of the state a survey shoud be made to determine if a sufficient number of milk cows are available within the area to produce a volume that is adequate for economical operation. . . .
. . . Assembling costs are chiefly costs of labor and transportation.
The costs per pound of making and marketing creamery butter varied with the volume handled.[169]

In 1932, the Virginia Agricultural Experiment Station issued a bulletin on the marketing of tobacco.[170] It pointed out that tobacco production had been declining in Virginia for several years due to declining prices which made that crop less profitable than competing crops. Virginia tobacco was sold largely through auction warehouses.

[164] J. J. Vernon and R. S. Kifer, "The Market for Milk in Richmond, Virginia," Virginia Agr. Exp. Sta. *Bulletin* 263 (Blacksburg, 1928), p. 15.
[165] J. L. Maxton and C. C. Taylor, "Marketing Fluid Milk in Four Virginia Cities," *Bulletin* 275, p. 4.
[166] J. L. Maxton, "Manufacturing and Marketing Dairy Products in Virginia," *Bulletin* 280.
[167] Maxton, "Dairy Products," p. 6.
[168] Maxton, "Dairy Products," p. 13.
[169] Maxton, "Dairy Products," p. 3.
[170] R. A. Ballinger and J. L. Maxton, "Marketing Virginia Tobacco," *Bulletin* 285.

The disadvantages of the auction warehouse sale of tobacco include lack of bargaining power by the tobacco farmers, sale without consideration of Federal grades, wide variations in price for the same grades even in the same market on the same day, and uneven flow to market. They far outweigh the advantages to the farmer of immediate payment for his tobacco. . . .

Tobacco marketing in Virginia could be improved by the elimination of the auction warehouses which sell only very small volumes of tobacco at prices considerably below those paid in the larger markets. The cooperative marketing of tobacco, where the cooperative marketing association operates as a sales agency under the auction system, but sells according to Federal grades, could improve the present marketing condition in Virginia by narrowing the spread in the price paid for tobacco of the same grade.

For the years of study, much more tobacco was marketed during the early months of the marketing season than during the later months. A more uniform flow of tobacco to market throughout the season should reduce the cost of marketing because it would make possible a reduction in the number of warehouses required to handle the crop. The present uneven flow of tobacco to market seems to be caused largely by the higher prices that have prevailed in the early part of the season for the past several years.[171]

The bulletin contains much interesting historical and descriptive material, the study of which is essential to an understanding of the production and marketing problems of Virginia.

Missouri

The agricultural economists at the University of Missouri pointed their research definitely to the answering of questions agitating the minds of farmers. They did not overlook the importance of seeing production problems in the light of the marketing outlook, as in the case of strawberries and grapes, nor of seeing marketing problems in the light of the conditions of production, as in the case of butterfat.

Missouri farmers were interested in hog marketing — both as sellers and as buyers — because the corn deficit areas of south Missouri produced feeder hogs, while the corn surplus areas bought hogs to feed. The trade was in part direct from farmer to farmer and in part through central markets. The marketing of stock hogs, that is feeder hogs, was studied by Richards and Thomsen.[172] Since 1914 stock hogs have been shipped from central markets to feeding areas. That was made possible by the discovery and perfection of hog cholera immunization.

St. Paul and Kansas City are the two largest markets for stock hogs, because of their proximity to both feeding and production areas. Other markets are of course of some importance. The total central market movement for each year varies roughly between 500,000 and 900,000 hogs. Iowa, Illinois, and Missouri are the largest buying states. From 30,000 to 60,000 hogs are shipped into Missouri each year from central markets. A large part of them come from Kansas City but a considerable number are shipped from St. Joseph, St. Louis and St. Paul.

[171] Ballinger and Maxton, "Tobacco," pp. 3, 5.

[172] P. Richards and F. L. Thomsen, "Marketing Stock Hogs in Missouri," Missouri Agr. Exp. Sta. *Research Bulletin* 146 (Columbia, 1930).

The number of stock hogs shipped from country points to Missouri each year averaged about the same as those coming from central markets. South Missouri has always been the most important origin of these country shipments. Arkansas is usually the only other important state of origin. South Missouri also ships a large number of stock hogs to other states, usually not more in total than the number shipped to Missouri.

Both central market and country shipments to Missouri are made very largely in the first four months of the year. Iowa and Illinois are different from Missouri in this respect. There is a considerable seasonal movement to these states in the fall as well as in the spring. . . .

Prices of stock hogs follow prices of slaughter hogs very closely. . . . The times of highest stock hog prices are usually the times of greatest stock hog shipments, indicating that the total supply of hogs is much more influential as a factor affecting stock hog prices than supplies of stock hogs alone. The margin of current fat hog prices over current stock hog prices usually varies between 30 cents and $1.00 per cwt.[173]

The authors of the Missouri study of marketing livestock by trucks reached the conclusion that when all marketing costs from farm to packer are taken into account:

. . . in 1931 in the St. Joseph territory truck shipment on the average was cheaper than rail shipment for hogs, cattle and sheep, from all distances encountered. In the Kansas City territory truck shipment was cheapest for hogs at all distances, and for cattle up to about 90 miles, but for sheep rail shipment was cheapest from points more than 40 miles distant. In the St. Louis territory the railroad made a better comparative showing, having about the same total costs as trucks for hogs, slightly lower costs for cattle, and considerably less for sheep.[174]

National Association of State Marketing Officials

State marketing officials co-operated with the federal government in making the standard grades effective and in disseminating market news. The National Association of State Marketing Officials was organized at a meeting held at Murray Hill Hotel, New York, February 5–7, 1920. The following states were represented: New York, Pennsylvania, New Jersey, Oklahoma, Wisconsin, West Virginia, Florida, Ohio, Massachusetts, Virginia, Nebraska, Georgia, Montana, Connecticut, Maryland, South Carolina, and Vermont. Also present were representatives of the U. S. Department of Agriculture, which was important because of the co-operative relations between the federal government and the states in carrying on marketing activities, such as shipping point inspection and the development of grades and standards. At that meeting a report of the Temporary Committee on Interstate Relations was adopted. It outlined the proposed activities of the Association:

1. That reliable information of supply of commodities of each State and demand for commodities from other States be disseminated by each State Department of Bureau of Markets.

[173] Richards and Thomsen, "Stock Hogs," p. 69.

[174] F. L. Thomsen and W. R. Frankhanel, "Livestock Trucking in Missouri," Missouri Agr. Exp. Sta. *Bulletin* 317 (Columbia, 1932), p. 20.

2. The adoption of as nearly as possible, uniform grades and standards of the same commodity for fruits and vegetables.
3. The adoption of the same class and style of containers.
4. That wherever State inspection services are established, certifications and inspections should be on the same basis in each State; and that each State inspection service co-operate with the U. S. Bureau of Markets inspection service in drafting rules and regulations under which to operate, and that interstate inspection be made by the State Inspection Service and wherever possible the U. S. Bureau of Markets make all interstate inspections.
5. The interchange of weekly and daily market reports.
6. The interchange of census figures and estimates of production in the several states.
7. The interchange of accurate and timely information regarding activities of co-operative marketing associations in the various States.
8. Co-operation between States in following up interstate shipments of perishable fruits and vegetables.
9. That the Committee on Permanent Organization consider the appointment of a committee on market investigations, and that this committee shall act as a clearing house for information regarding market investigational activities in the various States.[175]

[175] National Association of State Marketing Officials, *Summary of Proceedings at Organization Meeting,* 1920 (Mimeographed report, [1920, p. 9]).

PART SIX

LAND ECONOMICS

26.

Farm Ownership and Tenancy

THE PRINCIPAL work that has been done in land economics has related to land tenure, irrigation economics, land colonization, land policy, and land utilization. The means of acquiring the ownership of a farm received early attention from economists. The means of adjusting the relations between landlords and tenants later became a central feature in the study of land tenure. Irrigation projects have financial and legal aspects which call for the work of institutional economists. The writings of R. T. Ely, R. P. Teele, and H. C. Taylor in that field have received special attention. The works of B. H. Hibbard and L. C. Gray in the field of land policy and utilization have been noted.

Tenancy and Farm Ownership in the United States

While farm journals and some popular magazines gave more or less attention to the tenure of farm land in the United States, particularly in the second half of the nineteenth century, few economists were attracted to this subject prior to 1900. Francis A. Walker, as Director of the Census of 1880, initiated the statistical study of tenancy and landownership in the United States. That was amplified in the census of 1890 by a special study of home ownership and indebtedness. The next four census reports gave statistics of tenancy which provide the quantitative basis for studying trends in land tenure.

The University of Wisconsin was a leader in the early development of land economics. Richard T. Ely was interested in that subject when he went to Wisconsin in 1892. When H. C. Taylor went to Wisconsin in 1896, Ely encouraged him to prepare himself for work in the undeveloped field of agricultural economics. Taylor had his attention focused upon rural economic problems in 1893 while a student at Drake University by reading the chapter on "The Problems of the Country" in *The New Era,* a book by Josiah Strong.[1] Taylor now

[1] Josiah Strong, *The New Era, or The Coming Kingdom* (New York: The Baker & Taylor Co., 1893).

feels that the economics of Strong's chapter is questionable, but the emotional content was at that time useful in arousing the young student to a definite purposefulness with regard to the relation of the American farmer to the land he tills. The new impulse resulted in Taylor's writing his first essay on agricultural economics entitled "The Future Farmer."[2] The thinking done in that connection led him to transfer to the Iowa State College at Ames, where he took the course in agriculture. The course of instruction at Ames related almost wholly to the physical and biological aspects of the subject. Before graduating in 1896, Taylor came to realize that something he had looked for when entering the agricultural college had not been found. He believed that economics, sociology, and political science had a contribution to make to rural life which his college course failed to provide. That feeling led Taylor to seek further education. The University of Michigan had the highest reputation at that time among the state universities, but Richard T. Ely was at Wisconsin. Taylor had read one of Ely's books and wanted to study with him.

When Taylor entered the University of Wisconsin as a graduate student in the late autumn of 1896, much elementary work had to be covered along with graduate courses, but by the middle of his second year Taylor was writing an essay on land tenure.[3] That essay related primarily to the extent of tenancy in the United States and the economic forces which tend to increase tenancy at the expense of landownership by farmers. The writing of that essay was stimulated by a statement made in 1897 by Richard T. Ely in his seminar in economics to the effect that owing to the fact that land is capitalized at a rate lower than the current rate at which money can be borrowed on farm mortgages, farmers cannot go in debt for land and hope to pay the debt from their earnings. Taylor challenged Ely's statement on the ground that there is a wide range in the ability of farmers and that while marginal and sub-marginal farmers could not hope to buy land and pay for it out of earnings, farmers of superior ability could do so, although the high capitalization of land would retard even the superior in paying for farms. Taylor gave credit to Francis A. Walker for the idea of differential profits due to superior ability.[4]

Taylor's essay, read in Ely's seminar early in 1898, is the first analysis we have discovered of the economic forces which tend to retard or to facilitate the acquisition of landownership on the part of farmers. The phrase "agricultural ladder" was not used. Instead Taylor spoke of the "stages" through which the young man normally passed in making the transition from hired man, through tenancy and mortgaged ownership, to the free ownership of a farm. He included

[2] H. C. Taylor, "The Future Farmer." (Unpublished manuscript, dated November 1893, in H. C. Taylor Archives.)

[3] H. C. Taylor, "Farm Proprietorship in the United States." (Unpublished manuscript, dated March 1, 1898, in H. C. Taylor Archives.)

[4] See F. A. Walker, *Political Economy* (3rd ed.; New York: Henry Holt and Company, 1888), pp. 232–45.

gifts, inheritance, and profits in farming, as factors facilitating ownership. On the other side, he discussed high prices of land, high interest rates, double taxation, and an appreciating standard of value, as factors retarding payment for a farm out of the profits of farming. That essay was analytical and statistical, and parts of it were highly theoretical. The theory was not presented as a conclusion but as a guide to the research essential to arriving at a conclusion. That was the temper of graduate work in economics at Wisconsin under Professor Ely, who encouraged theoretical analysis but gave emphasis to the phrase, "Look and see."

That essay of Taylor's, entitled "Farm Proprietorship in the United States," was written and rewritten several times, and the title was changed to "Tenancy and Farm Ownership" when it was submitted as a thesis[5] at the Iowa State College of Agriculture and Mechanic Arts in the spring of 1898. We are including an abridged edition of the thesis:

TENANCY AND FARM OWNERSHIP

I.

The purpose of this essay is to study the condition of farmers in the United States with respect to the ownership of land, and to outline some of the forces which facilitate the acquisition of ownership, as well as those forces, which, retarding this acquisition, tend to increase the tenant class.

There were no statistics available on the subject of farm proprietorship in the United States, prior to 1880. The census of 1880 showed that 25.56 per cent of the farms were cultivated by tenants. This gave rise to much discussion concerning the probable future of the American farmer. Some writers thought tenancy was a means to land ownership, while others contended that those who once owned land finally lost it and became tenants — that in time, tenancy would become general.

In 1886, David B. King said:

"While there are exceptions, and tenants are found who are unthrifty or whose lot is a hard one, as a rule the American tenant-farmer prospers, and in very many cases passes from the tenant to the land-owning class. It is a decided advantage to many an agricultural laborer and farmer's landless son that numbers of owners of farms have become so prosperous that they do not care to till the soil themselves, or, for other reasons, rent their land. It often happens that a young man, engaged in agricultural or other labor, by thrift and economy, lays by enough to stock a small farm which he rents 'on the shares' or for a fixed sum. In a few years he saves enough to buy the property, paying perhaps one-half of the purchase money at once, and the remainder in annual payments extending through several years. The former owner is secured by a mortgage on the farm. By the time the man has reached middle life he owns the farm free of debt. . . .

"It is not surprising that the casual observer, seeing many hard-working tenants on poorly stocked farms, and many owners apparently deeply in debt, should be alarmed at the state of things. On closer observation one

[5] H. C. Taylor, "Tenancy and Farm Ownership." (Unpublished thesis submitted for the degree of Master of Scientific Agriculture, Iowa State College of Agriculture and Mechanic Arts, June, 1898.

finds, however, that, in most cases, the hard-working tenant and the interest-paying owner are both prospering and rapidly becoming independent."[6]

To quote Henry Strong, whose business it was to sell railroad lands and lend money on farm mortgages:

". . . just after the panic of 1873, and during the years 1874-5 and 6, I loaned several hundred thousand dollars in Illinois and Iowa upon farm mortgages, and all of these loans, with two exceptions, were paid. These exceptions were in cases of large farmers, who were speculating in cattle in the Chicago market, failed in business, and turned over the mortgaged lands to me, aggregating about three thousand acres of mostly cultivated farms, which I divided up and rented to about a dozen tenants. These lands were afterward nearly all bought by these tenants, and, so far as I know, are now owned by them or their grantees.

"I could cite a great many similar instances. . . ."[7]

In a later number of the North American Review for the same year, Henry George responded:

". . . tenancy . . . is not the normal estate of man, and is so far from being the primary condition of American agriculture that we have been accustomed to look on the American farmer as necessarily the owner of the acres he tilled.

"Mr. Strong would have us think, and Prof. King really seems to think, that tenant farming is, in the natural order of things, the intermediary stage through which 'agricultural laborers' are enabled to pass into a condition of land owners, just as, in the older handicrafts, the condition of journeyman was the intermediary condition between that of apprentice, with which all craftsmen must begin, and that of master workman, to which all could aspire. The truth is just the reverse of this. Tenant-farming is the intermediary stage through which independent tillers of the soil have in other countries passed, and are in this country now beginning to pass, to the condition of agricultural laborers and chronic paupers.

"But sufficiently startling as is the fact that in 1880 more than one-fourth of American farms were cultivated by tenants, this of itself does not fully indicate how largely our agricultural population have already been divorced from the soil. Tenancy is only the later form of the disease; the earlier form is the mortgage."[8]

Statistics of farm tenancy are given in two reports of the Census of 1890. One investigation having the farm as a unit,[9] as in 1880, and the other having the family as a unit.[10] We have no figures to compare with those of 1890 for *farm family* proprietorship. But by comparing statistics on *farm* proprietorship for the years 1880 and 1890, we find an increase during this decade of 2.81 in the percentage of tenancy.[11]

Of the *farm families* of the United States in 1890, 65.92 per cent owned the farms they operated, while 34.08 per cent occupied hired farms.

The farm proprietors of the United States were classified in 1890, according to age.[12] The classification shows that of all farm operators under

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[6] D. B. King, "American Landlordism," *North American Review* 142:256–57, (March 1886).
[7] Henry Strong, "American Landlordism," *North American Review* 142:251 (March 1886).
[8] Henry George, "More About American Landlordism," *North American Review* 142:393 (April 1886).
[9] *Report on the Statistics of Agriculture,* U. S. Census Office, 11th Census, 1890 (Washington, 1895), Vol. 5.
[10] G. K. Holmes and J. S. Lord, Special Agents, *Report on Farms and Homes,* U. S. Census Office, 11th Census, 1890 (Washington, 1896) Vol. 13.
[11] *Report on the Statistics of Agriculture,* U. S. Census Office, 11th Census, 1890 (Washington, 1895), 5:4.
[12] Holmes and Lord, *Report on Farms and Homes,* Vol. 13, Diagram 31, opposite p. 218.

twenty-five years of age, 66 per cent were tenants and 34 per cent owners of the farms they operated; and of all over sixty years, 17 per cent were tenants and 83 per cent owners.

The classification shows further: that in the North Central states, of all farm operators under twenty-five years of age, 61 per cent were tenants and 39 per cent owners; while of all over sixty years, 9 per cent were tenants and 91 per cent owners; and that in the South Central division, of all farm operators under twenty-five years of age, 74 per cent were tenants and 26 per cent owners; while of all over sixty years, 31 per cent were tenants and 69 per cent owners. In every case the decline of tenancy, and increase of ownership, with advancing age, was gradual; there being about the same decline of the one and increase of the other, for each five year period. *This suggests that only the least capable farm operators remain in the tenant class permanently, and that the majority of tenants gradually acquire ownership.*

A study of the mortgage indebtedness of farmers, in 1890, shows that 18.6 per cent of all the farm families of the United States occupied incumbered farms. The total incumbrance amounted to $1,085,995,960 which is 35.55 per cent of the total value of the incumbered farms.[13]

An investigation of the distribution of farm mortgages shows:[14] that throughout the southern states where the percentage of farmers who remain tenants all their lives, was very high, the percentage of incumbered farms was very low; that the six states having the highest total incumbrance on farms were New York, Iowa, Illinois, Kansas, Ohio, and Pennsylvania; the total incumbrance of these states being $553,964,594, or 51 per cent of the total for the United States; yet with this high total incumbrance the percentage of the value of incumbered farms represented by mortgages was 37.25, which was only 1.7 above the average for the United States; and the mortgaged farms represent only 25.3 per cent of the total farm value of the six states; but the total farm value of these six states is 42.3 per cent of the total farm value of the United States. Thus, while a large per cent of the farm mortgage indebtedness of the United States is concentrated on a small area, there is also a large per cent of the farm values concentrated on the same area. Further investigation shows: that 64.38 per cent of this indebtedness was for the purchase money of farms;[15] that in Illinois, Michigan, Minnesota and New Jersey, from one-third of one per cent to one and one-half per cent of the number of farm mortgages are foreclosed each year;[16] and that the average duration of farm mortgages is about five years.[17]

This consideration of the distribution, purpose, foreclosure, and duration of farm mortgages, leads to the conclusion that the *mortgage is used successfully as a means of acquiring land ownership.*

While it may be true that occasionally the owner of a farm mortgages his land and, losing it, is reduced to the tenant class, these facts concerning tenancy and incumbrance point to the correctness of the conclusion that the majority of tenants gradually accumulate wealth and purchase farms; that in most cases the purchase is made before the whole price of the farm has been accumulated, and a mortgage is given in part payment. This gives rise to a constant movement from tenancy to free ownership.

Any force which facilitates the acquisition and accumulation of wealth by farmers will tend to increase the number of those who are able to make the transition from tenancy to free ownership, and shorten the average time

[13] Holmes and Lord, *Report on Farms and Homes,* Vol. 13, p. 58.
[14] Holmes and Lord, *Report on Farms and Homes,* Vol. 13, pp. 58, 66, 69.
[15] Holmes and Lord, *Report on Farms and Homes,* Vol. 13, Diagram 20, p. 144.
[16] G. K. Holmes, "Tenancy in the United States," *Quarterly Journal of Economics,* 10:49 (October 1895).
[17] G. K. Holmes and J. S. Lord, Special Agents, *Report on Real Estate Mortgages,* U. S. Census Office 11th Census, 1890 (Washington, 1895), 12:109.

required for making the transition; while any force which retards this acquisition and accumulation will tend to diminish the number of those who are able to make the transition and lengthen the time required for making it.

In the following pages, we shall attempt to analyze the conditions and forces which determine farm proprietorship in the United States.

II.

Ownership in property is ever changing from hand to hand. If the acquisition of land by farmers were to cease for one generation, all farm operators would be tenants. Hence we must look to the conditions which enable these operators to acquire land. There are three possible means by which ownership in land may be acquired, namely: gift, inheritance, and purchase.

1. So long as a government has plenty of desirable land which is given to any farmer who wants a home, it is comparatively easy to acquire ownership. But when all the best free lands are taken, inheritance and purchase are the only means by which the vast majority of young farmers may acquire land.

However, the decline during the decade from 1880 to 1890 in the percentage of farmers who own the farms they operate, can not be traced to a decline in the number of farms received from the government, for there was an increase in the absolute number of farms thus received, and, relative to the number of farmers, the decline was only one-tenth of one per cent. Since 1890 the number of farms received in this way has rapidly declined.

2. The influence of inheritance upon farm proprietorship is too large a subject to be treated exhaustively in this paper. But the general principles may be stated: that the greater the amount of wealth accumulated by one generation and transmitted to the farmers of the next, and the more evenly this wealth is distributed, the greater the ease with which farms may be acquired by their operators; but the larger the farm families in a given community, and the larger the percentage of each generation who seek a livelihood in other industries, the greater the amount of wealth, which will be drawn from agriculture into other industries by inheritance, and the smaller the part which inherited wealth will play in the acquisition of land ownership.

Between 1870 and 1890, speaking relatively and in round numbers, two million men gave up farming and went to join the great army of toilers in our cities. Taking their families into account, six million people from the farm were added to the population of the town; or, to put it in another way, in 1870, according to Carroll D. Wright, 46.72 per cent of all the persons engaged in gainful occupations were employed in farming. In 1890 only 36.44 per cent were so employed. . . .

". . . men leave the farms because they are not needed there.

The introduction of labor-saving machinery and rapid transportation has produced the same result in agriculture as in other kinds of manufacturing. A smaller number of men working in our fields turn out a much greater product than the greater number of laborers could possibly secure in olden times, and the products of all lands are easily carried . . . where they are needed. . . . Within the past twenty-five years, invention has gained the mastery in agriculture as in other arts. The brain of man has triumphed over his hand here as elsewhere."[18]

If only the poor moved from country to city, the total wealth of the community would be affected but little by this movement of population. But the

[18] A. C. True, "The Solidarity of Town and Farm," *The Arena,* 17:538–39 (March 1897).

rich farmers are quite as apt to move to the city as are the poor ones, and this stream of population is carrying a vast amount of wealth from country to city every year. This movement of rich farmers to the city has rightly been given as one cause of an increase in the percentage of tenancy.[19]

While this movement of wealth and population from country to city may have helped to increase the percentage of tenancy during the decade from 1880 to 1890, there is no reason to believe that, as a permanent force tending to swell the ranks of the tenant class, this movement is of great significance. Improvements in agricultural methods and the cultivation of better lands have made it possible for the relative number engaged in agriculture to be greatly reduced. But there is a limit to this reduction. There is a point at which, with present methods of production, the industries of country and city are at an equilibrium. After this point has been reached the movement might cease entirely were it not for the fact that larger families and greater longevity in the country than in the city will ever necessitate a slight movement from country to city to maintain the equilibrium. Ordinarily this will take only a small amount of wealth from country to city each generation, and most of the wealth accumulated by one generation of farmers will be inherited by the next.

The relative importance of inherited wealth as a means of acquiring ownership will not change because of a change in land values, for the higher the value of land the greater the amount of wealth to be inherited.

3. The third means of acquiring land ownership is that of saving from the earnings of many years and making a purchase. This means of acquiring ownership is of especial significance in a consideration of the conditions which make it possible for tenant farmers to become free owners of land. The majority of tenants are able to save from their earnings because they receive a profit above the cost of living, and the replacement of annual expenditures.

When long periods of time are taken into consideration, the price of agricultural products, as determined by supply and demand, tends to be such that the total product of the least capable farmer will equal his cost of living and all other annual expenditures including rent and normal returns on permanent investments. This being true, the least capable farmers may be able to save from the returns on permanent investments. But if they are tenants, this will mean but little. The average value of machinery and implements on farms in 1890 was about $108[20] — it is not fair to suppose that the average tenant owns nearly so much machinery; this and a team are the most important permanent investments made by the tenant. Normal returns on so small an amount cannot give rise to sufficient saving to enable the tenant to buy a farm. Owing however to the wide differences in proficiency manifest by farmers in the field, in the feed lot, and on the market, a very small percentage of American farmers belong to the class of least capable or marginal producers. The vast majority receive a differential gain which may be saved and invested in land. This differential gain or personal profit is a species of rent, and conforms to the same principle as entrepreneur profits.[21] The law may be stated as follows: Personal profits in agriculture arise out of the differences existing in the proficiency of different farm operators who compete for the use of land and sell their produce on the same market. The personal profit which any farm operator will receive is equal to the differences between his net annual income and the net annual income of the least capable farm op-

[19] Josiah Strong, *The New Era* (New York: The Baker and Taylor Co., 1893), p. 172.

[20] *Report on the Statistics of Agriculture,* U. S. Census Office, 11th Census, 1890. Table 1, in 5:74.

[21] F. A. Walker, *Political Economy,* (3rd ed.; New York: Henry Holt and Company, 1888), pp. 235–43.

erator, who regularly competes with him on the market. (By net annual income we mean the gross income, minus annual expenditures, including the rent of land and normal returns on permanent investments.)

The greater the number of farmers who have gained a degree of proficiency above that of the least capable of marginal operators, and the greater the difference between the degree of proficiency of the majority of farmers and that of the marginal operators, the greater is the total differential gain which will go to farm operators as personal profit, and the more capable are the farm tenants of becoming land owners. On the other hand, the more homogeneous the farm operators who supply the market, i.e., the smaller the number who have gained a degree of proficiency above that of the marginal or least capable operators, and the less this degree of difference, the smaller is the total personal profit, and the less able are farm tenants to accumulate sufficient wealth to buy the farms they cultivate.

The fact that in the south central states 82 per cent of the Negro farmers are tenants[22] may be explained in part by this principle. The Negroes of these states present little variety as to proficiency and a very large proportion of them are marginal operators. In general, it may be said, the desire for ownership remaining the same, any influence which increases inequality in proficiency will increase the percentage of farm owners and any influence which increases equality as to proficiency will increase the percentage of farm tenants.

It has been said[23] that the settlement of inefficient foreigners upon American farms is developing an ignorant rural peasantry. If this is true, personal profits will be reduced. The census of 1890 however shows a smaller percentage of tenancy among farmers of foreign parentage than among white farmers whose parents were both native born.

III.

While tenancy and incumbered ownership are the stages through which great numbers of young farm laborers pass in becoming free owners of farms, there are certain causes operating which retard this transition.

Economists have noticed that the market value of land is often greater than the capitalization of its rent at the current rate of interest. This, it is said, accounts for the inability of many farmers to own land. For the man whose farm is mortgaged must pay, for example, six per cent for the use of money which as an investment in land is yielding him no more than four per cent.[24]

This difference between rent and interest is due, partly, to the fact that returns on permanent investments are always smaller than returns on short time loans.

But there are other influences tending to bring about the same result. Double taxation, in most of our commonwealths, is a most evident cause operating to bring about such a discrepancy. The farmer who has acquired incumbered ownership must pay tax on all the property and at the same time the mortgagee pays tax on the mortgage and shifts most of the burden onto the mortgagor. . . .

While we are able to indicate the general tendencies, we are not able to measure the forces and counter forces which determine the extent to which the tax will be shifted. Only by an investigation of the actual results of changes in tax laws, can we give a definite conclusion, and such a conclusion should not be used as a basis of generalizations.

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[22] Holmes and Lord, *Report on Farms and Homes,* 13:174.

[23] Strong, *The New Era,* pp. 172–73.

[24] Lujo Brentano, *Agrarpolitik* (Stuttgart: J. G. Cotta'schen buchhandlung nachfolger, 1897), Part I, pp. 83–97; and R. T. Ely [as quoted on p. 35].

Mr. Nathan Matthews made an investigation of the results of the exemption of mortgages in Massachusetts by the law of 1881, and gives the following conclusion:

"It is clear that the rate of interest on those kinds of personal loans which compete with mortgage loans, instead of declining at the same rate as mortgage interest, has, so far as trade paper, collateral loans, and corporation paper are concerned, not declined at all; and so far as railroad bonds go, the average decline in seven years since the repeal of the tax on mortgages has been only one-third of one per cent.

"On the other hand, the decline in mortgage interest is admitted . . . to have been over nine-tenths of one per cent down to 1886; and rates are lower now than then. In Suffolk County, where the operation of the law of 1881 was naturally quickest there has been a decline of fully one per cent; and it took place at once." . . .[25]

The Massachusetts Tax Commission reached practically the same conclusion: The average rate of taxation in the State was one and a quarter or one and a half per cent. On the whole the exemption of mortgages in 1881 resulted in a reduction in the rate of interest of about three-quarters of one per cent.[26]

Thus far we have considered the loan as the only means by which one man's capital may be operated by another. But in some industries, notably, agriculture, the lease is used alongside of the note. It is evident that the effect of a tax on notes will be somewhat different under such conditions. When the note is taxed and the lease is not, the capitalist does not have to choose between lending and operating for himself, but between lending and leasing. . . . Unless the rate of interest rises to the extent of the tax, leasing will be more desirable than lending. Hence no tenant can become an incumbered owner without paying all of the tax on the mortgage. It may be said that the rate of interest in the whole industrial community will not rise much more than one half the tax rate, judging from the experience of Massachusetts, while the net rate of interest will fall nearly half the tax rate. How then can the whole tax be shifted to the borrower? Simply in this way: Profits on marginal investments in rented land will be the same as before the tax was levied. If this is capitalized at a lower rate, the price of the land will be higher. Part of the extra tax will be paid as interest on more money and part as a higher rate. When the landlord sells his land he will demand enough to maintain the same net income. Hence it seems true that the farmer who uses the mortgage as a means of changing his condition from that of a tenant to that of a free owner of land, must bear about all of the burden of any tax levied upon the note which he issues. The shifting of the tax in this case does not involve the friction of changing operators, nor does it demand close gradation of operators, nor can prices be affected. The only condition necessary to its taking place is that the men who furnish capital to farm operators use the method which, other things being equal, will give the highest net return.

To illustrate the working of this force, let us suppose that *A.* is a tenant and *B.* owns a farm of 100 acres. *A.* has been renting *B's.* farm for several years. He has paid $3. an acre or $300. a year for the use of the farm. After deducting $50. for tax, *B.* has received a net return of $250. But now that *A.* has saved $2,500., he desires to buy the farm and give a mortgage in part payment. *B.* is willing to sell the farm to *A.* and take the mortgage, if *A.* will give him a price for the farm such as will bring him a net return of $250 when invested or loaned with equally good security. Let us take first the condition

[25] Nathan Matthews, Jr., "Double Taxation of Mortgaged Real Estate," *Quarterly Journal of Economics* 4:343–44, (April 1890).

[26] Massachusetts Commission on Taxation, *Report of the Commission Appointed To Inquire Into the Expediency of Revising and Amending the Laws of the Commonwealth Relating to Taxation* (Boston, 1897).

without the tax and suppose that the current rate of interest on secure loans is 5 per cent. The $250 capitalized at 5 per cent equals $5,000. At this price, *A.* buys the farm [and pays down $2,500.] *A.* will now pay the tax of $50, and the interest on $2,500 at 5 per cent or $125. This with normal return on the $2,500, which he has invested, or $125, will equal the $300 which he had previously paid as rent. But now suppose a tax of one per cent has been levied and the gross rate of interest has risen to 5.5 per cent but the net rate has fallen to 4.5 per cent. *B.* will now capitalize the $250 at the new net rate of 4.5 per cent and will charge $5,555 for the farm. *A.* must now, if he still is willing to buy, give a mortgage for $3,055 and pay 5.5 per cent interest or $168. This with the tax on the farm of $50 and normal net return on his actual investment of $2,500, or $112, will equal $330 for the use of the farm or $30 more than when he rented it. Hence after the tax is levied *A.* must pay $30 extra tax out of his profits, which would otherwise be available for paying off the mortgage. This "double tax" will keep some tenants from undertaking to own farms, will delay the purchase of all, and increase the time required to pay off the mortgage, thus increasing the percentage of tenancy and incumbrance.

While the short duration of loans and double taxation place the borrower of capital at a disadvantage in buying land, there is another cause operating which may bring about a discrepancy between rent and interest which gives the farmer an advantage over all other buyers of land. The fact that a farm has greater value to the operator when he owns than when he rents it, makes the operator willing and able to pay more as interest for the use of money to invest in land than he could pay as rent for the use of the same land. The farmer who remains permanently on the same farm understands better how to use the various fields to the best advantage. He may rotate crops at his own pleasure, and plant when he pleases. He can breed and feed stock to better advantage because he can plan for a long period of years. His odd time can be employed in caring for fruit trees and making permanent improvements of various kinds. Hence the farmer on his own land can make more money than a farmer of equal proficiency who remains a tenant and moves from farm to farm as American tenants do.

F. A. Walker says:

". . . there is a virtue in the mere ownership of land by the actual laborer, which goes far, very far, to outweigh the advantages which great capitals bring to the cultivation of the soil. The 'magic of property' in transmuting the bleak rock into the blooming garden, the barren sand of the seashore into the richest mould, has been told by a hundred travellers and economists since Arthur Young's day. In his tireless activity, 'from the rising of the lark to the lodging of the lamb;' in his unceasing vigilance against every form of waste; in his sympathetic care of the drooping vine, the broken bough, the tender young of the flock and the herd; in his intimate knowledge of the character and capabilities of every field, and of every corner of every field, within his narrow domain; in his passionate devotion to the land which is all his own, which was his father's before him, which will be his son's after him . . . [the farmer] holds the secret of an economic virtue,"[27] which the power of capitalists can never overcome. . . .

In the United States the vast majority of the buyers of land are farmers and the landlords are very generally retired farmers, whose farms are, in the course of time, put upon the market. Under this condition, if the buyers are more aggressive than the sellers we may find a discrepancy between the capitalization of rent and the market value of land.

[27] F. A. Walker, *Land and Its Rent* (Boston: Little, Brown and Co., 1883), p. 204.

While such a discrepancy between interest and rent will mean a discrepancy between returns on loans and returns on investments in land, to the landlord, it will not give rise to the same discrepancy where the farmer has invested in land for his own use. The landlord gets no return but rent. The farmer gets the rent and a surplus because a given farmer can make more money on a given farm if he owns the land than if he rents it. Hence, instead of a discrepancy from this cause between rent and interest, retarding the farmer in becoming the owner of land it gives him an advantage over the capitalist.

The surplus arising out of ownership, and the difference in returns on permanent and short time loans, are inherent in our social order. The double tax is brought about by the action of the state and may be removed by the same authority. The surplus arising out of ownership is permanent. The losses due to high interest charges are felt only while the farmer is in debt, and by removing the double tax this loss may be reduced to a minimum.

It has been thought that an appreciating standard of value will retard this transition from tenancy to free ownership. But if the price of land responds as readily to a change in the standard of value as does the price of farm produce — and as the value of farm land in the United States is ever rising and falling there is no reason to believe that it will not — and if the farmer accumulates half the purchase money before buying, and then pays off the mortgage in a period no longer than is devoted to saving, the loss and the gain through appreciation will about balance each other.

It has been said that other things remaining the same the higher the value of land the higher the percentage of farm tenants. From the standpoint of reason this would seem to be true. The size of the farm remaining the same, the higher the farm acre value the more purchase money required to buy a farm, and the more time needed for its accumulation. This will lengthen the average time required for making the transition from tenancy to free ownership and thus increase the percentage of tenancy and incumbrance.

A study of the distribution of farm tenancy, in 1890, with respect to land values shows: that throughout the Appalachian region, and along the coast of the Atlantic Ocean and Gulf of Mexico, the percentage of tenancy was low; while throughout the "cotton belt" and elsewhere in regions where Negroes form a large proportion of the population, the percentage of tenancy was high; that in California it was generally true that farm tenancy was high where the value of farms per acre was high; that in Kentucky the percentage of tenancy was uniformly high in the "blue grass" region, which contains the most valuable farm acres of the state; that in the southern part of Illinois where farm acres were cheaper, and the general conditions less favorable for agriculture than in the central part of the state, there was a lower percentage of tenancy; that in Michigan the percentage representing farm tenants, gradually diminished in the direction of more recent settlement and of cheaper farm acres; a condition that prevailed in Minnesota, Nebraska and Kansas;[28] and that in every geographical division of the United States tenancy was higher in the counties containing cities of more than eight thousand inhabitants.

Throughout the United States it seems to be true, with a few exceptions, that the higher the farm acre value the higher the percentage of tenancy.

We may say in conclusion that while there was a slight increase in the percentage of tenancy during the decade from 1880 to 1890, and there are certain forces which if operating alone might establish a permanent tenant class much larger than we have at present in the United States, there are also

[28] Holmes and Lord, *Report on Farms and Homes,* Vol. 13, maps between pp. 32 and 33; Table 15, p. 41.

conditions which make it more profitable to society as a whole, and to the farmers in particular, for land to be operated by its owners. Owing to a differential gain arising out of a difference in the degree of proficiency manifest by competing farmers a large proportion of those in the tenant class are gradually accumulating wealth and becoming farm owners. There are causes which facilitate and causes which retard this transition from tenancy to free ownership. While we can recognize the various forces operating, and study the results of their operation in the past, their relative importance may be ever changing. We cannot, with any degree of certainty, predict the condition of the American farmer of the twentieth century. However it is clear that the popular notion that American farmers are fast forming a rural peasantry dependent upon a landlord class is without basis in fact or reason. On the other hand, there is reason to believe that legislation looking to a more equitable distribution of the burdens of taxation, and to the further development and wider extension of opportunities for agricultural education will give the farmer a firmer hold on the basis of his economic activity.

Decline of Landowning Farms in England

His reading of English economic history impressed Taylor with the idea that a study of the causes of the decline of landowning farmers in England might throw light on the problems of landownership and tenancy in the United States. He decided, therefore, to study English agriculture firsthand. In a conversation with Professor Ely in June 1899, the latter said, "I fear you will not find enough material for a Ph. D. thesis on the subject of landownership in England, but whatever subject you decide upon let it be something relating to land."

Before leaving for England in July 1899, Taylor met the economic historian, William Cunningham, of Cambridge, England, who was teaching in the University of Wisconsin summer session that year. Cunningham gave Taylor letters of introduction to persons whom he thought would help in the research work Taylor had planned.

On August 4, 1899, Taylor started his study of British agriculture. Fifty days were spent in England, Wales, Scotland, and Ireland visiting landlords, or more often their agents, tenant farmers, and a scattering few working farmers who owned the land they cultivated. That 50-day tour gave Taylor a clear picture of British agriculture with special reference to the condition of tenant farmers and relations of landlord and tenant. The landlord's heretofore strict control of the system of cropping was being somewhat relaxed at that time owing to the low price of grain. That enabled the farmer to make some adjustments in his cropping system with a view to producing better paying crops.

Outstanding in interest was the way in which the Agricultural Holdings Act of 1883 was protecting the tenant in his investments in and upon the land in case his lease was terminated by the landlord, and, on the other hand, the way in which the landlord was protected against soil exhaustion and damage to buildings by the tenant.

Inquiry was made as to the causes of the decline in the number of landowning farmers, but that decline had taken place so remotely that neither farmers nor landlords knew much of the history. The farmers were clear on one point, however — they preferred to be tenant

farmers rather than to undertake to own the land. A major reason given was the low returns on landed investments. Farmer after farmer would say, "Landlords are content with two per cent on their investment in the land and I can make ten per cent on my capital used in operating a farm." Answers to questions as to the amount of capital required to operate a farm indicated that it took as much capital to operate an English or Scotch farm in 1899 as it took at that time to own and operate a farm on the same acreage in the Corn Belt of the United States. The general impression made upon the traveling student was that tenant farmers in Great Britain lived better than the landowning farmers of the United States and were as contented with their lot. It was clear, however, that non-farmer investors in British farm land accounted in large measure for the high price which made the buying of land by farmers impracticable. A tour 25 years later, in which several of the same farms were visited, brought out the fact that the high prices of farm products during World War I, which was not accompanied by a corresponding rise in land values, led to some of the farms being purchased by the tenants. That was in some measure due to the unfortunate financial situation of some of the landlords.

Having completed the 50-day agricultural tour of 1899, Taylor spent four months in London searching in the British Museum library for evidences of the existence at one time of a class of landowning farmers in England. That fact established, he searched for information regarding the forces and conditions, economic, political, and social, which caused the disappearance of that class of farmers. The findings were used as a Ph. D. thesis at the University of Wisconsin and published in 1904.[29] The conclusions of that study were summarized:

> . . . Two hundred years ago more than half the farmers of England owned the land which they cultivated. To-day, [1900] practically all are tenants.
>
> This extinction of the yeomanry took place in some parts of England during the eighteenth century. In some counties this was a result of the "new agriculture" which made inclosures and large farms more profitable than small farms in the common fields. The new agriculture required, also, that more capital be applied upon each acre, and calculating farmers found it profitable to rent as much land as they had the money to stock rather than to lock up their capital by investing it in high priced land. In other counties the yeomen farmers were crowded out by gentlemen farmers — men who, having made money in other pursuits, became farmers because agriculture was the favored pursuit among the wealthy classes of England.
>
> But taking England as a whole there was no marked decline of the yeomanry until the third decade of the nineteenth century. Between 1820 and 1875 the number of landowning farmers was gradually reduced to insignificance. During this period the fact of greater returns on investments in farm stock than in land remained a constant factor. The neighboring landlords and men of wealth generally were still ready to consolidate small estates into large ones. But the condition which led to a rapid decline during this period

[29] H. C. Taylor, "The Decline of Landowning Farmers in England," University of Wisconsin, *Bulletin* 96, Economics and Political Science Series V. 1, No. 1 (Madison, 1904). A summary statement of the findings is in Taylor's *Outlines of Agricultural Economics* (New York: The Macmillan Company, 1925 and 1931), Chap. 24.

was the fall in prices. During the Napoleonic wars, when prices were high and rising higher, it was possible to buy land and pay for it out of the profits of farming. It was then the common thing for the more successful farmers to invest their savings in land. As a rule, they purchased more than they could at once pay for and gave a mortgage to secure the payment of the indebtedness thus incurred. It was also common among the yeomanry for one son to succeed to the family patrimony upon the payment of certain sums for the provision of his brothers and sisters. Thus it was that a large proportion of the yeomen farmers were burdened with indebtedness, which the fall in prices made it impossible for them to pay. Some sold their incumbered farms within a few years. Others held out longer but in time they too gave up or died, and their farms were sold.

Farmers rarely invested in land after 1820. The farms were sold to wealthy men who wished to build up family estates. These large estates were valued for the social standing which they confer upon their owners as well as for their returns in the form of rent. They are commonly kept intact by a system of entails so that once the small estates become incorporated into the larger ones, they rarely come into the market again. There is still land for sale in England but the price is so high, compared with the value of produce, the expense of making the transfer so great, and the land-credit system so poor that farmers do not often care to indulge in the luxury of landownership. On the other hand, the relation between landlord and tenant is very satisfactorily arranged, the farmers are, as a rule, contented with the present system, and the fields of England prove that landownership on the part of farmers is not essential to good agriculture.[30]

Relations of Landlords and Tenants in Great Britain

After 11 months in Germany studying agriculture econmics under J. Conrad, of Halle, and Max Sering, of Berlin, Taylor returned to England. In the study he had made the previous year he had started with the assumption that tenancy was undesirable and that everything possible must be done to promote landownership by farmers. However, his findings convinced Taylor that tenancy, while only a stage in the progress of most United States farmers toward landownership, should have, as an institution, a permanent place in American agriculture and for that reason should be improved. With this in mind, Taylor spent several months in the library of the British Museum collecting materials which gave the story of the evolution of the methods used in England to protect the tenant and the land under a system of intensive farming. The time factor in that evolution is impressive. The problem was stated by Walter Blith in 1649:

> . . . if a Tenant be at never so great paines or cost for the Improvement of his Land, he doth thereby but occasion a greater racke upon himselfe, or else invests his Land-lord into his cost and labour *gratis,* or at best lies at his Land Lords mercy for requitall; which occasions a neglect of all good Husbandry, to his owne, the Land, the Land-Lord, and the Kingdomes suffering.[31]

[30] Taylor, "The Decline of Landowning Farmers in England," pp. 60–61.

[31] Walter Blith, *The English Improover, or A New Survey of Husbandry* (London: printed for I. Wright, 1649), pp. 1 and 2 of unpaged preface. This passage is quoted in H. C. Taylor's several editions of *Agricultural Economics* about as it is quoted in James E. Thorold Rogers, *Six Centuries of Work and Wages* (New York: G. P. Putnam's Sons, 1884), pp. 458–59. The 1653 edition of Blith is titled *The English Improver Improved, or The Survey of Husbandry Surveyed.*

The 21-year lease was the remedy proposed in the eighteenth century when the new agriculture was emerging. Both Arthur Young and William Marshall advocated long leases as essential to improved agriculture where large investments were made in improving the soil. But experience showed that long leases containing clauses prescribing the type of farming could become embarrassing to the tenant if unfavorable changes in market conditions took place. Landlords disliked the long lease because the tenant benefited in a period of rising price and often could not pay the rent in periods of falling prices. Landlords also disliked long leases because tenants often farmed the land the last few years of the lease in a manner to exhaust the soil. The plan which proved far better than long leases in England was that which, in case there was occasion for terminating the lease, allowed the tenant compensation for the unexhausted improvements that he had made. The Great Britain Board of Agriculture survey of West Riding of Yorkshire, results of which were published in 1799, described a system of giving the tenant security in his investments in good farming. Since this Yorkshire custom seems to have been a forerunner of legislation three-quarters of a century later, we quote:

> . . . The landlord covenants to allow the tenant, on quitting his farm . . . what two indifferent persons shall deem reasonable for what is generally called full tillage, and half tillage, being for the rent and assessments of his fallow ground, the ploughing and managing the same; the lime, manure, or other tillage laid thereon; the seed sown thereupon; the sowing and harrowing thereof; also for the sowing, harrowing, manuring, and managing any turnip fallow, which he may leave unsown; also for any clover seed sown on the premises, and harrowing and rolling in of such seed; and for every other matter and thing done and performed in a husbandry-like manner on such fallow lands, in the two last years of the terms; also for the last year's manure left upon the premises; and for any manure and tillage laid upon the grass land.[32]

A similar method of protecting the tenant in his investments in and on the land, but more extensive in its application, had become an established custom by the middle of the nineteenth century in Lincolnshire.

In speaking of compensation to tenants for unexhausted improvement, James Caird said, in 1851:

> . . . The investment of a tenant's capital in land seldom contemplates an immediate return. He does not anticipate that a large expenditure in cleaning and enriching worn-out land will be all repaid to him in the first crop. He lays the foundation for a series of good crops, which in the aggregate he expects to repay him with interest. If he drains, makes fences, or other improvements of a more permanent character, a still longer period is requisite to compensate him. But he must either be secured in the possession of his farm for a certain period, sufficiently long to enable him to receive the benefits of his investment, or have some precise agreement under which he is to be repaid, in fixed proportions, for his outlay, if his landlord should see fit

[32] Robert Brown, *General View of the Agriculture of the West Riding of Yorkshire* (Edinburgh: printed for James Watson, G. Nicol, and the Board of Agriculture, 1799), p. 41.

to resume possession of the farm. Without either the one or the other, an improving tenant has no legal security for the capital he invests in the cultivation of another person's land.[33]

In speaking of the landlords of Lincolnshire, Caird said:

. . . They saw the advantage of encouraging tenants to embark their capital freely; and as leases were not the fashion of the county, they gave them that security for their invested capital, which is termed "tenant right," or compensation for unexhausted improvements.

Though this tenant-right may not be a strictly legal claim, it is universally admitted in Lincolnshire, the landlord paying it when a farm falls into his own hands, and refusing to accept a tenant who declines to comply with the custom. It varies, however, considerably in different parts of the county; and appears to have enlarged in its obligations with the greater development of agricultural improvement. In North Lincolnshire, the usual allowances claimed by the outgoing from the incoming tenant, include draining, marling, chalking, claying, lime, bones, guano, rape dust, and oil-cake. The following is the scale on which these allowances are usually made:

"When the landlord has found tiles, and the tenant has done the labour, if done within twelve months before the end of the tenancy, and no crop has been taken from land after the draining thereof is completed, the whole cost is allowed. If one crop has been taken from such land, three-fourths of the cost is allowed, and so on, diminishing the allowance by one-fourth for each crop taken; but this allowance is made only when the work is well and properly done by the tenant, to the satisfaction of the landlord or his agent, expressed in writing. — For marling or chalking, if done within twelve months before the end of the tenancy, the whole cost is allowed; for that done in the previous year, seven-eighths of the cost are allowed; and so on, diminishing the allowance by one-eighth for each year that shall have elapsed since the marling or chalking. — For lime used within twelve months before the end of the tenancy, if no crop has been taken from the land limed in that year, the whole cost, including labour, is allowed; if one crop has been taken from such land, four-fifths of the cost are allowed; and so on, diminishing the allowance by one-fifth for each crop taken from such land. — For claying on light land a similar allowance to that for lime. — For bones used within twelve months before the end of the tenancy two-thirds of the cost are allowed, and for those used in the previous year one-third of the cost. — For guano and rape dust used within twelve months before the end of tenancy, for turnips or other green crop, two-thirds of the cost are allowed. — For oil-cake, given to cattle and sheep, one-third of the cost price of that so used within twelve months before the end of tenancy, and one-sixth of the cost price of that so used in the previous year is allowed."

. . . The amount of these allowances is settled by arbitration. . . . On the whole . . . the system is believed to have worked well; though the landlords are beginning to find the claims of the outgoing tenants so serious, that, in order to check their increase, they prefer embodying the claims in a special agreement to trusting to the indefinite "custom" of the county. . . .[34]

In summarizing the extent to which the English tenants were protected by the above system, Caird said:

The only counties in which the custom of tenant-right is fully recognised, are Surrey, Sussex, the Weald of Kent, Lincoln, North Notts, and part of the

[33] James Caird, *English Agriculture in 1850–51* (London: Longman, Brown, Green, and Longmans, 1852), pp. 503–04.

[34] Caird, *English Agriculture in 1850–51*, pp. 194–95.

West Riding. In these counties the custom has been so long in operation, as to have become binding in law, and they afford us an opportunity of judging whether the system has worked so well in practice as to justify its extension to all the other counties of England.[35]

Writing of this development in 1905, when the subject was fresh in his mind as a result of his studies in England, H. C. Tayor said:

. . . In some of these regions the system was not giving very good results. In Surrey, the custom of tenant-right was said to be "promoting an extensive system of fraud and falsehood among the farmers." The custom seems to have been quite loosely formulated in that county, and it was possible for the farmers to "work up to a quitting," as it was called, and thus defraud the landlord or the succeeding tenant. Not being properly regulated the "compensation" often embraced "large payments for imaginary improvements and alleged operations, which, even if they had ever been performed, would be more injurious than beneficial."[36]

But while the custom of tenant-right was very imperfect in its operations in some parts of England, the principle on which it was based was sound, and in time it was to be embodied in the laws of the land. The custom of tenant-right struck at the very heart of the tenant problem. It guaranteed to the tenant just returns for his investments, without involving the many disadvantages of the long-period lease. The experience of the landlords and tenants of Lincolnshire had already proved that where the system was properly regulated the custom of tenant-right was satisfactory in practise as well as sound in principle.

In 1850, a bill was introduced into Parliament which aimed at the embodiment of this custom of tenant-right into a law. It was entitled "A Bill for the Improvement of the Relation between Landlord and Tenant in England and Wales." Its purpose, as stated in the preamble, was to insure to farmers, compensation for properly constructed, permanent improvements. The idea of enacting a law of this kind was not new in 1850. Two hundred years before, Walter Blith advised that a law be enacted "whereby every landlord should be obliged . . . to give him [the tenant] reasonable allowance for his clear improvement."[37] The bill of 1850 did not pass, but neither did it die. Again and again similar bills were brought before Parliament, and in 1875 an act was passed, which laid down the conditions for compensating the outgoing tenant, but unfortunately no provision was then made to keep the landlords from requiring the tenants to contract themselves out of the right to claim compensation under the law, and while the law was beneficial in that it systematized and brought greater uniformity into the practise of granting compensation where tenant-right was recognized, it was not generally adopted. The author of the bill, even, asked his tenants to contract themselves out of the benefits of the law which he himself had framed.

In 1883, a new bill, the Agricultural Holdings Act, was passed. This Act contained a clause making it illegal for a landlord to contract himself out of the conditions of the law. . . .[38]

In 1925 Taylor wrote:

The law [Agricultural Holdings Act] of 1883, with the slight modifications of the Acts of 1900, 1906, 1908, 1913, and 1914, is still in force, and it will be worth while to examine it with considerable care. The law enables the

[35] Caird, *English Agriculture in 1850–51*, p. 505.
[36] Caird, *English Agriculture in 1850-51*, pp. 194–95, 119.
[37] J. E. T. Rogers, *Six Centuries of Work and Wages* (New York: G. P. Putnam's Sons, 1884), p. 459.
[38] H. C. Taylor, *Introduction to the Study of Agricultural Economics* (New York: The Macmillan Company, 1905), pp. 311–13.

tenant farmers to obtain from the landlords as compensation for improvements at the termination of their tenancies, "such sum as fairly represents the value of the improvement to an incoming tenant."[39]

Taylor taught the English system in his classes and talked it in farmers' meetings, but he has been disappointed in the slowness of the progress in getting the idea planted in the minds of American landlords, tenants, and statesmen. He practiced certain phases of the system with his tenant farmer, an Englishman who understood the system. It may be that when the process of soil exhaustion has gone as far as it had in England a century ago, American farmers will adopt this system, unless in the meantime they think of a better method of solving the problem. We believe this idea, and the means of administering the law based upon the idea, is the most important contribution the English have made toward the solution of the tenant problem. The system is worthy of careful study by American farmers and statesmen.

Ricardo's Theory of Rent

Another English idea relating to land tenure is Ricardo's theory of the measure of rent. Ricardo taught that the rent of the most productive land should be measured by the amount of product it would yield in response to a given investment of labor and capital above the yield of the same investment on marginal land which he considered would yield no rent. In Taylor's studies of English land tenure, he did not find that either the landlords or the tenant farmers thought in terms of Ricardo's theory of the measure of rent. But in the classroom of Edwin Cannan at the London School of Economics he met those who accepted without question the Ricardian theory. Cannan said in one of his lectures that certain economic principles were settled for all time and gave as an example the Ricardian theory of rent.

Taylor's earlier studies had impressed upon him the idea that farmers vary in productivity quite as much as different grades of land vary. Having recognized the influence of differences in the efficiency of farmers upon the amount of competitive rent paid for land, Taylor rejected the Ricardian theory as a measure of rent but of course recognized the differential character of rent. That differential rent, he pointed out, will always be greater than the difference in the productivity of the land when the productivity is measured by what the marginal farmer can produce on each grade of land, but the rent will be less than the difference between the productivity of the land when measured in terms of what the most efficient farmer can produce

[39] H. C. Taylor, *Outlines of Agricultural Economics* (New York: The Macmillan Company, 1925), p. 398.

on each grade of land. That statement of the differential character of rent left room for differential profits of the farmers who possessed a superior degree of efficiency.[40] Taylor recognized that his restatement of the differential theory of rent in a form which made room for differential profits did not go far in helping to determine how much rent should be paid for a given farm. Its main value was in emphasizing differential profits which might vary for a given farmer with the quality of the land chosen, and in rejecting the Ricardian theory of the measure of rent which had guided many economists into lines of reasoning which led to false conclusions. Thus, while Taylor advocated the English system of compensation for unexhausted improvements, he repudiated the Ricardian theory of rent.

Discussion of Land Tenure in the Agricultural Press

After returning to the United States in 1901, and accepting an instructorship at the University of Wisconsin, Taylor found time, in addition to his regular University duties,[41] to renew his study of land tenure in this country with a background of European observation and study. Having published the results of his studies in English land tenure in 1904[42] and 1905,[43] and having made a preliminary study by correspondence of the methods of renting farm land in the United States, the results of which were summarized in 1905,[44] Taylor turned his attention in 1906 to a more thorough study of land tenure in the United States. That study utilized three methods of gathering data — library research, correspondence, and field studies. During the regular University session available time was given to extracting from the files of farm journals and other sources historical and comparative material relating to land tenure and the methods of renting farm land, and to analyzing information received through correspondence with farmers and others interested in renting farms. These studies were facilitated by a small appropriation by the Carnegie Institution.

During the winter of 1906–07 all of Taylor's spare time was used in excerpting materials relating to land tenure from the *Cultivator* and the *Country Gentleman* and from such other agricultural papers as were available in the library of the State Historical Society of Wisconsin.

The excerpts from the farm papers provided a large amount of material which can be no more than sampled here with a view to presenting some of the thoughts of farmers and agricultural editors.

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[40] Taylor's modification of the Ricardian theory of rent and his application of Walker's theory of profits to farmers may be found in any of the editions of his *Agricultural Economics*.

[41] Teaching economic geography and English economic history. He was asked to teach agricultural economics beginning in 1902.

[42] Taylor, "The Decline of Landowning Farmers in England."

[43] Taylor, *Introduction to the Study of Agricultural Economics*, pp. 286–327.

[44] Taylor, *Introduction to the Study of Agricultural Economics*, pp. 235–85.

THE WISCONSIN FARMER, 1856

In 1856 the *Wisconsin Farmer and Northwestern Cultivator* published a statement, prepared by a friend of the editor, on the amount of capital required to buy, stock, and operate a Wisconsin farm. This is of interest in contrast with the discussion in the *Country Gentleman* a few years later. The statement read:

In compliance with your request I make a little computation of the outlay required in Southern Wisconsin to buy a farm of 100 acres, and also the expense of stocking and starting the same, in a proper manner for a home, and for profitable cultivation.

A farm of one hundred acres of medium quality of land, partially improved, with 50 acres plowed and fenced, with a comfortable cheap house and stable, and not near enough to a large town for a fancy value, could be bought for $16 per acre, cash $1,600
A good substantial low-priced horse team, including harness and wagon at 360
Plow, drag, cultivator, and small tools to start with, ... 150
5 cows at $30 per head, ... 150
Other animals, including pigs, poultry, &c., &c., ... 50
Household furniture, stove, &c., usually necessary to be purchased by those who come from a distance, ... 100
Incidentals, accidentals, and expenses that cannot be foreseen or enumerated, ... 100

Making an aggregate amount of $2,510

The above estimate I consider a sufficient expenditure for any economical farmer and family, with which to commence in a comfortable condition, in any of the medium counties of the State.

If one's means are moderate, one half of that sum can be made to answer every purpose, by going to the newer portion of the State, and purchasing as good but cheaper land — by substituting a yoke of oxen for the horses and harness, and starting with 3 cows instead of 5, &c., &c.

The first estimate will situate a farmer well, in almost any of the rural districts, where school, social and business privileges can all be enjoyed, and a Rail Road Station be reached within a convenient distance for market purposes.

A word further as to what an industrious man can do on such a farm with average crops and prices. With 50 acres under the plow, as follows:

30 acres in wheat, with an average yield of 20 bushels per acre — making 600 bushels, which ought usually to bring $1 per bushel $600
10 acres of oats, at 40 bushels per acre, 400 bushels, at 30 cts. per bu. 120
6 acres of corn, 240 bushels, at 40 cts..... 96
2 acres potatoes, 200 bushels at 25 cts..... 50
2 acres garden and miscellaneous crops..... 50
Calves raised and growth of the stock..... 40
One colt raised, (as the horses should be mares,) 40
Advance in the value of the farm, per acre, say $3 per annum, which is a low estimate for good farming land 300
Making an aggregate of $1,296
From which, (if the farmer has no sons to assist him,) deduct, the wages of a good farm hand for 6 months at $15 per mo. $90
For horse shoeing and repairs 10

For keeping teams, stock, &c., and grains for family use, say	300
For cost of seed	80
Unlooked for items	116
Total expense being	$596
Leaving a balance of	$700

at the close of the year, with the land only half under tillage.

I would say that I have allowed nothing for family groceries, and the like; but offset the butter, eggs, poultry, &c., against them, which are ample, if the wife is a prudent and thrifty manager.

In conclusion I would say, that perhaps I have omitted some items, but I believe the computation is sufficiently correct, and shows a good fair reward for Wisconsin farming.[45]

COUNTRY GENTLEMAN, 1860

"How to get a farm" was given considerable attention in the agricultural press during the nineteenth century. With vast areas of western lands available and large numbers of people moving west to acquire new land at low cost, there were also many persons who desired to remain in the East and acquire farms. This question of how to get a farm was propounded by G. B. S. in the *Country Gentleman*[46] in 1861 and called forth a series of articles during the following year. Of those who responded to the inquiry all agreed that a young man without money should work for wages for a few years to gain experience, accumulate capital, and establish a reputation. This done there were three views as to the next step. One view vigorously advocated by a farmer who had succeeded by that method, was that the best procedure, after saving $500, was to buy a small farm of 10 or 20 acres and farm it intensively. A general view of the problem was presented by *F.* as follows:

One of the greatest difficulties encountered by young men, in trying to get a farm, is to get a start, or in other words to get the first $500. Almost any young man that will go to work, and earn and lay up that amount of money, may with good habits and industry and economy, be sure of sooner or later owning a good farm. It cannot be too strongly impressed on the minds of all young men, that the great starting point in their fortune, is to earn and lay up the first $500 or $1,000. Not only for the help that amount will be in gaining more money, but in firmly fixing in their minds the principles of industry, economy and self-denial, which are to be the foundation of their future success.

The most usual course taken by farmers' sons to get this start, is by working out by the month for farmers; and perhaps it is the best course open to thousands of young men in our country. But a large portion of these young men are only able to get work for seven or eight months of the busy season, leaving them idle during the winter and a part of the spring and fall. The wages they will earn in this way, will not enable them to lay up money very fast. Hence the enterprising young man that is determined to succeed, will either be sure to hire out by the year, or teach school through the winter, or find some kind of job work, by which he will be able to make good wages all of the time. He will also keep in mind, that by continual faithfulness, care

[45] Unsigned letter in *The Wisconsin Farmer and Northwestern Cultivator* 8:440 (October 1856).

[46] Letter signed by *G. B. S.* in *The Country Gentleman* 18:288 (Oct. 13, 1861).

and attention to the business of his employer, he will not only be earning and getting much higher wages than others, but he will be forming habits of care and attention, that will be highly useful as long as he lives. By taking this course a young man ought to lay up $100 a year, and many will lay up more. We will suppose he commences when he is 21, and when he is 25 has saved $500.

Now, what is the best course for a young man that has earned, or by some other means come in possession of $500, who wishes to get a good farm? He desires, and ought to have one worth $4,000 or $5,000 or more, and with him the very important question is, what is the best course for him to take to get it? Now without taking into consideration the question of going into a new country, in pursuit of cheap land, I conceive he must choose one of the following courses: He will either continue to work out, or he will take or rent a farm, or he will buy and commence farming on a small farm. It being necessary, in order for any one to pursue either one of the two last courses, to have some capital; it is not considered that there is the same necessity for working out after a man has $500, that there was before. Consequently he may now be considered as fairly in a condition to take his choice between the three courses here pointed out. And, as undoubtedly there are many, in different parts of the country, that may find it desirable to follow each of these different ways, and many more desiring all the information they can get, in regard to the best course to pursue, perhaps it will be best to bestow some attention on each of these ways to get a farm.

First, in regard to working out. This is a very simple, plain, straight-forward way to get a farm. It is only a continuation of the course already pointed out for those who have to start with nothing for an indefinite period of time, which will be longer or shorter in proportion to the amount desired to commence with . . . .

Perhaps there is nothing that a spirited, enterprising young man would view with greater reluctance than the proposition for him to make up his mind to work out for from ten to twenty years of the best of his life in order to get the requisite capital to commence the business of farming with. He will probably say that he has not so much objection to working out a few years in order to get a few hundred dollars to start with. But as to working out that length of time it is useless to talk about it; he is not going to do it. Point him to some one that has succeeded in this way; he will admit it, but say this is an exception, not the general rule, and will point to many men that have failed of ever getting farms by working out, and will say that no man with a growing family on his hands can lay up anything, to say nothing of saving enough to buy a farm; while there are few young men that have not formed ties and made arrangements, that are not to be put off for a very indefinite period. Hence put the case in as strong a light as we may, or argue it ever so strongly, it will be of little use. Consequently those that would persuade young men to stick to farming, and undertake to point out a way whereby they may get a farm, will, in most cases, have to show them some other way besides working out. Yet it cannot be denied that young men do not always sufficiently appreciate this way of getting a start in the world; that in many cases it is the best thing a single man can do as long as he remains single, and that many that have left it for other business would have done better if they had not made the change.

But we must pass on to consider the second course, for a young man to take, in order to get a farm. Renting a farm, or taking one on shares, is, next to owning one, what seems to suit young men the best. . . . In this section, whenever there is a good farm to be let, there are sure to be from eight to ten, and sometimes a score or more applications for it. While at the same time there are many that would like to let their farms, were it not for this

one difficulty — they are sure to be worked on the skinning system; which, while it gives them but little present profit, is injuring, if not ruining their land. Hence, I would impress on the minds of all, young or old, in the strongest language, and in the most earnest manner, the great mistake they make in thinking that, because they are working another man's farm, they cannot afford to farm well; that they are taking a course that not only gives them but little present profit, but one, that, more than perhaps anything else, tends to deprive them of the chance of getting what little they do have; and that not only will they realize a much greater present profit, by as good farming as the circumstances will allow, but should it be the case, that at first they are not able to get a good farm, but have to take up with rather inferior, or badly worn land, they may be sure that, if they are doing their best, it will be known and observed, and they will have no trouble in getting better land, when they wish to make a change.

The advantages of this course, may be made still plainer by taking a case, many of which may be found in all of the older sections of the country. The owner of a 100 acre farm, that has not only made the principal part of his property out of his farm, but has brought up, educated, and given his children more or less of a start in life; and who has found by experience, that one half of the produce of his land will support him satisfactorily, wishes to let his farm if he can get a tenant that will farm well. Though he well knows that he could make more by hiring his work done, yet he wishes to relieve himself and family from the trouble of taking care of the farm, and hired help. Now why can't a tenant, if a young man with a small family, take that farm and go on and make money; and at the same time keep the land in good condition? The owner made money, and kept the land improving; why may not the tenant make money, and at least keep the land in its present conditions? I see no reason why he can't, nor do I believe there is any — except poor management.

Again, let those that think they can't afford to farm well on another man's land look to England. Much of the best farming in that, or perhaps any other country, is tenant farming. Not only does the tenant have to pay enough in rent and taxes, to buy land in many sections in this country, but he spends thousands in manuring, and other improvements. Indeed, it is said that his rent, taxes, and other farm expenses are so large, that he is obliged to cultivate his land in the best manner; that he could not get along without doing so. Yet he lives well and makes money; and it is said that many tenant farmers do so well, and are so well satisfied, that they prefer remaining tenant farmers, even after having made money enough to buy and have land of their own.

Now allow me to ask, why may not something like this be the case here? Why may not an American be a good tenant farmer as well as an Englishman? Have not our young men as much enterprise, intelligence, and ability, as the same class anywhere, and are they not as anxious to make money and go ahead? Then why not make the business of taking or renting land, one of the best courses a young man can take to get a start in the world; instead, as is too often the case, making it a losing business for all concerned?

But it will be said, taking for granted that tenant farming may be made to pay well, how are all that may wish to, going to get land to work? . . . it must be admitted that, though it may be a very good way to get a farm, for those lucky enough to get a good farm to work, yet many will fail, because there are not farms enough to be let to supply the demand.

This being the case, we will pass on to consider the third and last course proposed for a young man to pursue in order "to get a farm" . . . farming on a small farm. . . .

This course, as well as taking land, is more particularly calculated for a

married man. Though the single man that is able to get good wages and steady employment, may do very well, yet when he gets married he wants a home, and generally the sooner he gets one of his own the better. . . . I have found both by experience and observation, that a small piece of good land, even though there may be but a few acres, is a great help to a laboring man that wishes to get along in the world. . . . few young men are aware of how small a place may be made to give them more net profit for their labor than they can realize by working out.

Another advantage in having a small place, is that it will enable the owner to do something at both farming on his own land and working out. Whenever I have seen this "step in advance," (which it surely it), taken by a man of industry and economy, I have always observed that he went ahead much faster than he did when depending on his labor alone. So too, a small farmer will often find chances to take land by the piece, of farmers having more than they can or wish to cultivate, thus enabling him to add to his farming operations sufficiently to give him all the business he can attend to, and giving him quite respectable profits.

But leaving working out, or taking land, out of the question, few that have not tried it, or investigated the subject, are aware of how few acres will keep a man profitably employed during the busy season. . . .

Another great advantage in getting a piece of land as soon as possible is, it forms a beginning — a something to add to. Young men when working out, or working land and having no particular present need or use for their money, are apt to spend it, or allow it to slip away for something that in their circumstances they might better do without. But if they have land that they wish to finish paying for, or to make improvements on, or finding their little place insufficient for their wants, and aided by the stimulating effects of actual ownership, they are anxious for more land, they will be sure to save all they can to buy more with. When this course is once fairly entered on, they will be pretty sure to follow it up until they are each one the owner of a good farm.[47]

In a later article *F.* supplemented his article on "How To Get a Farm" by emphasizing the importance of using credit in buying a farm:

. . . As a general rule, I believe he may buy when he is able to pay half down for a farm, and stock it with a moderate allowance of farm stock suitable to the system of farming he intends to pursue, together with suitable teams, tools, &c., to begin with. And as a man that intends to pay a heavy land debt should not allow small debts to accumulate on his hands, so he should never begin by making a heavy debt on his land, and another large one for teams, stock, &c.

Again, the amount it will do to run in debt must depend in a great measure on the time and chance to pay, the buyer may be able to get. As when $2,000 or $3,000 are wanted in three or four years on 100 acres, it would be well to hesitate, while it might be safe to agree to pay that amount in ten years; so too it will be found more difficult to pay a given amount in large payments of from $500 to $1,000 each, than it will to pay the same amount in $100 or $200 payments. The best way, where a large debt has to be made, is to take a deed and give a mortgage, payable annually in such sums as the buyer is sure he can pay besides interest, with the privilege of making the payments faster should he wish to do so. Then by managing to keep one or two pay-

[47] "How To Get a Farm," letter signed *F.* in *The Country Gentleman* 19:59, (Jan. 23, 1862); and 19:74 (Jan. 30, 1862).

ments ahead, he will never be distressed to make his payments in bad seasons, nor be obliged to sell when produce is ruinously low.[48]

That *F.* recognized the importance of high quality in men who would undertake to earn a farm and, furthermore, that the efficiency of a farmer is something that can be improved is indicated by this statement:

> . . . Every young man that wishes to succeed should make himself familiar with the agricultural literature of the day, . . . but he should be familiar with some of the best practical works on farming in the country. He will find this a great advantage if he works out in enabling him not only to work to much greater profit and advantage to his employer, and thus getting the extra wages that will be his due for highly intelligent labor, but in showing him how the knowledge gained by his present experience may be turned to his future benefit when farming for himself. Or, if taking or renting a farm, in learning how to manage it to the best advantage, both as regards present and future profits. Or if farming on a small place, not only in learning what may be and has been done on a little farm like his own in different sections of the country, but in learning how he may manage his few acres to the best possible advantage. But above all else he will find it of the greatest advantage in enkindling in his mind an ardor for, and an enthusiasm in the business of farming that, enabling him to triumph over every obstacle, will be sure, sooner or later, to bring him to the desired haven of success.[49]

In response to *F.*'s article, J. W. Colburn, of Springfield, Vermont, said:

> . . . I should ask him to reverse his opinion, and put the working out for wages to get a start in life at the head of his three ways to get a farm, as decidedly preferable to either of the other two.
>
> If the first thing that a young man thinks of and must do, after arriving to the years of his majority and destitute of means, is to get married, as is often the case, then he must do the next best way that he can — take a farm on shares, or purchase a few acres, but it will be but a few acres in four cases out of five that he will ever be likely to pay for and own. . . .
>
> I never can advise any young man to encumber himself with a young family to support until he has the means and can see his way clear to do it creditably and comfortably. . . .
>
> I have known many independent farmers that commenced life by working out for wages, but a precious few that commenced by taking land upon shares, or by purchasing a few acres, that ever were the owners of productive farms. This working land upon shares, or the product of a few acres, must necessarily be absorbed by the support of a family, while the young farm laborer should, and generally does remain without a family until he is able to purchase a farm and see his way clear to pay for it. While working out, it is not convenient to have a family, but almost indispensable when working a farm upon shares. . . .
>
> Why is this farm-work for hire so much to be dreaded? It is frequently the case that the hired man, though in one sense a farm-servant, works no harder than his employer; he does not have the care and perplexity on his mind that the owner does; fares equally with the family, and at the expiration of

[48] "Buying a Farm," letter signed *F.* in *The Country Gentleman* 9:221, (April 3, 1862).
[49] "How To Get a Farm," *The Country Gentleman* 19:74, (Jan. 30, 1862).

the year has more surplus cash to put at interest than the man who has employed him. . . .[50]

The Orleans County farmer, *F.*, summed up the argument by giving additional examples to illustrate his point and by saying:

. . . I think I have shown conclusively, that working out is not always "the shortest and surest way" to get a farm.

But not withstanding . . . that the same industry and economy that must be practiced to lay up money by working out, will, if applied with intelligence and skill, and with the help of a few hundred dollars to begin with, enable a man to make more money by working land on shares, or by buying and cultivating in the best manner a small farm, than he could by working out, I am far from recommending either course as being the best under all circumstances. And though reading, observation and experience lead me to a decided opinion that beginning on a small place was the best course for me to take, and as being the course I should take under the same circumstances, yet I am well aware that this would not be the case with every one, as personal choice and inclination has much to do with every man's success. While if I have said more about, and seemed to give the preference to farming on a small place, it is because the advantages of this way to get a start in life are not so well understood and appreciated as some others. But what I do wish to urge, and what I believe the examples here given, as well as those quoted and commented on by Mr. Colburn are well calculated to prove, is, that energy, industry and economy, when directed by good judgement, intelligence, and skill, are sure to lead to success, in either of the ways I have pointed out, to get a farm.[51]

Jonathan Talcott of Rome, New York, responded by shifting the emphasis from Colburn's view that the young man should work for wages until he can buy a standard sized farm, and from *F.*'s view that the buying of a few acres is the best next step after serving as a hired man and saving $500, to the view that share tenancy is the next best step after a limited apprenticeship as a hired man. Talcott said:

. . . with all due deference to Mr. Colburn, also for *F.*, I beg leave to dissent from their views as expressed in their communications, and take the middle ground, as spoken of in the articles referred to, and shall advocate it, and advise such young men as Mr. Colburn speaks of to adopt that plan in getting a farm. . . .

We see from what has been written by *F.*, and also by Mr. Colburn, that from $100 to $150 dollars per year can [be] saved by such men under the most favorable circumstances; probably $120 would be more than an average in the cases that have fallen under their observation, and in this vicinity it would be under that estimate.

Now we will look at the other side of the picture, keeping in view in the meantime the qualifications that the young man must possess. We will suppose him to be 21 years of age, with good health and all the requisites mentioned by Mr. *C.*, and that he has formed associations with some young lady of his acquaintance, who also possesses the same qualifications, but she also is without means to purchase a farm, although that is the object of their ambition, to attain which they are ready and willing to unite their interests in the realities of wedded life, and commence in earnest to acquire the desired

[50] "More About Getting a Farm," letter from J. W. Colburn in *The Country Gentleman* 19:178, (March 13, 1862).

[51] "Which Is the Best Way To Get a Farm? Hiring Land *vs.* Working Out," letter signed *F.* in *The Country Gentleman* 19:315, (May 15, 1862).

object. In the light that Mr. *C.* views it, they will probably fail; but viewing it in the position that I take, they will succeed, and much sooner than they would if both worked for wages, having the same end in view, viz., a good farm.

Such a couple can easily secure a good farm on shares from a good landlord in this State, and probably in most of the States of the Union, and instead of saving $100 to $150 per year, can, with the blessing of Providence, lay by from $300 to $500 per year, with more advantage on their side than to remain single. . . .[52]

Another article on this subject called attention to differences in the abilities of men to manage a farm:

. . . One will make the most by wages; another the most by management. A man who labors and lays up annually one hundred dollars over his expenses, and adds in the interest yearly, will have one thousand dollars at the end of the eighth year, two thousand at the end of the thirteenth, three thousand at the end of the seventeenth, and four thousand at the end of the twentieth. There are many men who would accumulate more in 20 years in this way than by managing a farm; and there are others who would borrow money to buy a farm and stock it, pay the interest on this borrowed money and be worth more at the end of the twenty years. Others again, would sink all they would make. There is one consideration, however, not to be forgotten — that few men working as day laborers, could support a family and lay up anything at all, and even then would not give so comfortable a living to wife and children as the farmer who works land and accumulates nothing. The following is the nearest to a correct answer to the question: The man who understands farm management well, and the necessity and use of surplus capital, will lay up a thousand dollars yearly, while the mere laborer would save but a hundred. The only difficulty is, many overrate their own abilities, and attempt managing a farm, when they could do better working by the month.[53]

Other articles followed which showed the keen interest in the subject. The articles also showed that working a farm on shares as a means of accumulating enough money to make part payment on a farm was counted a good method and rather common practice. The advantages of going in debt for land were also emphasized:

A few words in regard to running into debt for land. A land debt, when entered into with proper precautions, and well guarded, the farm being worth considerable more than the debt, and in a fertile condition, giving reasonable assurance of producing more than enough to pay the interest and a portion of the principal each year, and payments arranged so as to give ample time to meet them, is not a thing to be so much dreaded. In fact, it often seems to be an advantage. It seems to furnish an object, an end to strive for, to be attained to. It gives the farmer a home, a something that he wants and means to keep, that he would be sorry and ashamed to lose, and altogether something that will induce him to work harder and manage better than he has ever done before, rather than fail in. This seems to be so well understood among farmers that the remark is often heard, "that the best way to make money by farming is to buy and run in debt for land, and then go to work and pay for it."[54]

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[52] "Best Way for a Young Man To Get a Farm," letter from Jonathan Talcott in *The Country Gentleman* 19:346–47, (May 29, 1862).

[53] "Hiring Land and Working Out," *The Country Gentleman* 19:369, (June 5, 1862).

[54] "Buying a Farm and Running in Debt," letter signed *F.* in *The Country Gentleman* 21: 203 (March 26, 1863).

All these quotations show that in the early 1860's, just as the U. S. Department of Agriculture was being organized, working for wages, tenant farming, and mortgaged ownership were all well recognized as stages on the way to farm ownership.

WALLACES' FARMER, 1900-1905

At the turn of the century much interest was manifest in the relation of landlord and tenant. In 1900, with more than one farm in three operated by a tenant, it is not surprising that the agricultural press directed thinking to this subject. In the first five years of the twentieth century *Wallaces' Farmer* published many editorials on landlord-tenant relationships and gave much space to comments by subscribers. Uncle Henry Wallace, then editor of *Wallaces' Farmer,* had much sound advice for both landlord and tenant.

Three things impressed us as we read those editorials. Uncle Henry recognized the relativity of things and therefore spoke in general terms, seeing the necessity of adjusting the terms of a lease to the particular circumstances. Wallace recited the golden rule over and over again, asking the landlord to put himself in the place of the tenant and see how the equities would then look to him. Likewise, he asked the tenant to imagine himself in the position of the landlord and try to think how the arrangement appeared. He did not, however, present a balance sheet or tell the parties how, on the basis of expenses and income, to work out one that would enlighten them in applying the golden rule.

Wallace looked upon the land-renting methods then in use in the United States as temporary. The share system in grain farming he recognized as a long established custom but thought it was not a good system. The share system with livestock in partnership he looked upon as a temporary makeshift pending the time the livestock farmer had the means of furnishing all the livestock and paying cash rent. Henry Wallace was well impressed with the Scotch system of renting land on long leases. He believed that long leases on a cash rent basis and the use of hired managers instead of tenants would become more and more prevalent. He also felt that with increasing land values, fewer farmers could afford to own land. That Wallace's knowledge of British farming was based largely on observations in Scotland or in England prior to 1883 is suggested by the fact that he did not mention the Agricultural Holdings Act. That Act gave security to the tenant who made the investment in improvements essential to good farming and thereby made long leases with their many drawbacks unnecessary. In 1901 Henry Wallace wrote:

> The history of agriculture in all countries is a gradual advance in rents beyond that which the circumstances and conditions will justify. The reasons for it have escaped the notice not merely of farmers, but of many writers on political economy. To be understood, however, they have only to be pointed out. The renting of land differs from all, or nearly all, other rentals in two

or three important respects. If a man rents a store, he can take out all that he puts in. He is quite certain, if he is at all wise, not to put into the building anything which he has not the permission and ability to take out.

If a tenant rents a farm and conducts his farming operations with a view to retaining and increasing the fertility of the land, he necessarily puts in what he cannot take out, no matter how long his lease may continue. If he plows under clover every year, he must, when he leaves the land, leave a large amount of the fertility of that crop in the soil. If he hauls out manure, it will take him five years to get it all back in crops. A good tenant never can take out of the soil all he puts into it. Landlords take advantage of this fact and make it a means of advancing rents to the point when they become oppressive.

For example, if a lease expires, there are always tenants in the neighborhood who will offer an advanced rent because they know that they can take out, by following the soil robber's methods, more than they will put in. The grain farmer can for this reason always give more for a two or three years' lease than the stock farmer who is on the land can afford to pay, or ought to pay. If the landlord is grasping or greedy, he is quite likely to say to the tenant: "I am offered fifty cents (or a dollar) per acre more for this land than you have been giving me. I have been pleased with you, had rather rent to you than any one else, but my duty to my family requires me to get the full market price for the land."

The tenant talks it over with his wife and children, concludes it will cost him $100 at least to move, that he will lose two or three times as much by the breaking up of his plans, and, therefore, pays the advanced rent, hoping that seasons will be a little more favorable, that he will have better luck, or work a little harder. Other landlords soon hear of the higher rent obtained, and are disposed to put their rents up in the same proportion. It is the fact that the stockman can never take out all he puts in, while the grain raiser can take out more than he puts in, that leads to the gradual advance in rents that in the end impoverishes the land, the landlord, and lowers the entire standard of farming and of living as well in the community.

For if the tenant feels that he has been wronged, he makes up his mind that he will adopt the soil robbers' methods, will be less careful about hauling out the manure, will perhaps decrease his amount of stock, and will determine that if the landlord has wronged him he will at least get it out of the land. This explains why land in some neighborhoods is constantly decreasing in fertility, in the average of crops, and in harmony between landlords and tenants.

This decadence of agriculture is not peculiar to any state or country The agricultural history of every country shows first competitive rents, or fair rents, then rack rents, then a decline in agriculture; in France, revolution; in Ireland, land courts and judicial rents, perhaps one-third less than the rack rents prevailing; in England and Scotland, a generally declining agriculture and declining rents until landlords and tenants understand the principles of justice and righteousness that should govern.[55]

In that last paragraph Wallace was not thinking of the improvements wrought in Great Britain by the Holdings Act. In 1902 he said:

Landlordism and tenantry have come to stay, whether we like it or whether we do not. We will have bye and bye a class of tenants who will operate farms on long leases for cash rent, and who in their dignity, importance, and influence will correspond to the tenant farmers of England and Scotland.

[55] "Rack Rents," *Wallaces' Farmer* 26:2, (Jan. 4, 1901).

They will make more money in many cases than they do now owning their own land. In other words, it will be in the country as it is in the city when the man with a large capacity for business affairs can better afford to rent a farm (as merchants rent business houses in town) than to own it himself. The landlord can accept a lower rate of interest than the tenant can afford to because it is certain and permanent, while the tenant who thoroughly understands farming can afford to take the chances and face the chances to come in his favor by his superior knowledge, industry, and ability.[56]

When asked by a tenant farmer on a good farm whether or not he should continue to rent until he could make a good big payment on land of his own or try to buy with a small payment and involve himself in a heavy debt, Wallace replied:

There can be but one answer to the question asked. We fear that the first dose of real hard times will catch a good many of our friends in an uncomfortable position. Too many buying high priced land on margins too narrow for safety, and the reckoning will come after awhile.[57]

While the above quotation seems to imply that Wallace favored tenancy and discouraged going heavily in debt for a farm, in the following week he said:

With high priced land, there will be a disposition on the part of landlords to push rents up to the highest possible point from year to year. . . .

How to avoid rack rents, or rents in excess of what is just and right, is one of the problems with which the western farmer will have to contend in the near future. . . . The wise thing for the tenant, therefore, is to secure as soon as possible a home of his own and thus avoid rack rents, which under present conditions seem to be inevitable.[58]

We are now in the transition state in the matter of landlord and tenant. The time will come, possibly not for some years in the newer sections of the country, when landlords will either run their farms themselves with hired help, or rent on five year leases for cash rent to men who are able to stock the farms and operate them to the best interests of both landlord and tenant. A class of men will develop bye and bye who while not able financially to stock a farm are competent to operate it on a salary. A man of this kind is even now appearing here and there, and there will be more of them in the future. Land is so high in price that many men who can not own a farm and stock it can operate and stock it, and if they are skillful will in time own it.

Another consideration is that land is going very rapidly into the hands of business men and capitalists who know nothing about farming, whatever, and when they get to understand it they will look out for one of these two classes of farmers and, as the Irish say, "trate him dacent." In this new dispensation, which in fact it will be, landlords will make more money than they do now; so will the tenants.[59]

. . . the equities between landlord and tenant . . . will be a subject of absorbing interest for years to come and thus comes clearly within the range of subjects to be discussed in the agricultural Forum known as Wallaces' Farmer. We are therefore prepared to give large space to the discussion, believing that in so doing we are fulfilling our mission.

[56] "Just Rents," *Wallaces' Farmer* 27:35, (Jan. 10, 1902).
[57] "Landlords and Renters," *Wallaces' Farmer* 27:179, (Feb. 7, 1902).
[58] "Rack Renting," *Wallaces' Farmer* 27:215, (Feb. 14, 1902).
[59] "Landlord and Tenant," *Wallaces' Farmer* 27:587, (April 18, 1902).

There are three methods of renting or leasing land, a share of the crop, a share of the total produce whether crops or stock, and cash. . . .

No lease is equitable unless it secures the rights of three parties — the land owner, the tenant and the land itself.[60]

In a series of three articles in which the three methods of renting land were discussed, Wallace pointed out that the crop sharing plan required a minimum of improvements to be made by the landlord and the minimum of capital by the tenant. But of that system of renting land Wallace said:

. . . Land owners and tenants who adopt this system are simply soil robbers and not only soil robbers but robbers of the generations to come. This system provides no way whatever of maintaining the fertility nor of restoring it when lost, and the great Farmer of farmers proceeds to lock up the fertility in the soil and says to both land owner and tenant, "What are you going to do about it.[61]

The second method of renting land was described by Wallace as:

. . . where the land is rented for a share of the proceeds of the stock, and of such cash crops as are not profitable as food for live stock, that is, where the tenant undertakes to farm the land and thus obtains the raw material for stock feeding and converts it into the finished product, receiving as his share a specified part of the total returns.

There is much to be said in favor of this method. First, it in a manner compels long leases. No man can afford to farm land on this plan without being reasonably sure of a lease of from three to five years. This in itself is very desirable from the standpoint of the public welfare. Second, it almost of necessity involves a system of rotation of crops. For the best results a variety of foods are essential, and this can be secured only by systematic rotation. Third, it compels the land owner to take an interest in what is going on around the farm, and to keep himself posted on prices, markets, methods of farming, etc.

This method followed by intelligent and capable men fully protects the rights of the land. Farms managed in this way grow richer with each succeeding year. . . .

Such contracts should not be made between strangers, but only between men who know each other thoroughly and have confidence in each other, which is not easily broken. It is an admirable contract to make between father and son or between other close relatives, but not a good contract to be made between persons so closely related that they presume upon the relationship, and yet have not confidence in each other as men. This system is not practical, except where both land owner and tenant have each confidence in the integrity of the other, and where the land owner has full knowledge of the ability of the tenant.[62]

We have noted that Wallace favored renting for cash for a term of years. His reason for thinking that this "will be the coming method" was stated as:

. . . when land reaches a value of from eighty to one hundred dollars per acre, it rents for prices which induce the owner to retire, move to town, and

[60] "The Equities Between Landlord and Tenant," *Wallaces' Farmer* 27:1283, (Oct. 10, 1902).
[61] "The Equities Between Landlord and Tenant," 27:1283.
[62] "The Equities Between Landlord and Tenant," *Wallaces' Farmer* 27:1359, (Oct. 24, 1902).

live on the income. A class of farmers develop who are not able to buy this high priced land, but who by skillful farming can afford to pay the high rents and still make some money. In fact, they would rather rent land and pay rent equal to from four to five per cent interest on the land, than own the land itself, provided they could secure leases for from three to five years or longer.

If the rate of interest continues to fall in the next ten years as it has for the last five, a still larger per cent of the best farm lands of the Mississippi valley will pass into the hands of capitalists other than farmers, for the simple reason that they will bring a better income for a term of years than the savings banks can afford to pay. Besides that, there is every reason to believe that lands in the corn belt especially will increase in value in at least the proportion which population increases, which is about two per cent a year. These capitalists other than farmers usually know very little about the management of a farm or the handling of live stock, and hence will prefer to put in all the needed improvements that will induce the first class tenant to lease them, and thus have no further care or thought. . . .

Whether this method of renting protects the land in its right, or in other words protects the interests of the land, depends altogether on the use that is made of it. If it is used mainly for growing corn and is asked to grow corn year after year, it is no better than the first method, that of renting for a share of the crop. Nor will leases be very long under those conditions. In leasing land for a term of years to a man who is a corn grower and nothing else, or who is a grain grower and nothing else, the owner is simply giving a legal right to the tenant to get all he can out of the land, and let posterity take care of itself. This is soil robbing pure and simple. If the farmer takes advantage of the fact that in the corn belt there are usually more tenants than farmers, and exacts the highest rent he can get, the tenant has an additional inducement to get all he can out of it for the term of his lease, careless of what may come after him.

If the method is adopted which we hope to see even in our day, that of renting for cash for a long term of years, to tenants who have a fixed rotation of crops, of which clover forms a prominent part, and who utilize the entire crop of the farm (with the possible exception of wheat) for feeding purposes, we expect lands to advance in value because they advance in fertility. We expect to see rents advance, for a man can better afford to pay five dollars an acre for land that has been under a systematic rotation and where sufficient live stock are kept to utilize all the roughness and all the cheaper grains, than to pay three dollars an acre for land that has never felt the magic touch of clover. We believe in this kind of renting because it protects the interests of the land and protects the interests of the landlord and the tenant as well. . . .[63]

Arthur Young and William Marshall had held about the same view a century earlier and some good results accruing from long leases were noted, but English statesmen later found a better way.

The editorials on land tenure in *Wallaces' Farmer* stimulated letters from various counties in Iowa and the surrounding states. Some letters indicated that Wallace was thought to be rather British in his ideas about land tenure.

. . . I judge from the tone of the answer you made the correspondent that you favor the old country landlord and tenant system. Now, I hope that you or

[63] "The Equities Between Landlord and Tenant," *Wallaces' Farmer* 27:1442, (Nov. 7, 1902).

I, or any of our descendants, will never see that system established in this country.[64]

In response, Editor Wallace wrote: "This English method is not practicable except on long leases at a reasonable rate, and where the tenant has sufficient capital to conduct all the ordinary processes of the farm and tide himself over two or three bad years . . . ."[65]

Wallace was often asked to express himself on the subject of going in debt for a farm. In general his responses were conservative.

> We have received quite a number of letters of late from subscribers who have been renters and who during the past three or four years have accumulated from $1,000 to $3,000, asking us whether they should buy a home of their own, and if so, where.
>
> We can not in the very nature of things give these men definite advice as to what they should do. We do not know them personally, and can not measure their abilities, and the advice which we would give them might be exactly wrong. This much, however, we feel safe to say, that renters who have got something ahead are very apt to buy land before they are ready and go somewhat heavily into debt, to overestimate the privilege of ownership, and hence embarrass themselves for future years. We have known quite a number of men who, believing that good times will always last have incurred heavy indebtedness in the purchase of land, and, after struggling along for two or three years, have lost it and been obliged to start anew. Men are particularly tempted to do this when land has advanced in price for some time; in other words, to buy on a rising market, and, having incurred heavy indebtedness, have in many cases been compelled to sell on a falling market. Therefore, we would say, go slow in such times as these.[66]

Again he said, "Where a farmer can buy a piece of land and not go in debt for more than one-half of its cost and improvements, he is quite safe. . . ."[67] And again, "The man who goes in debt for raw land is always safer than the man who goes in debt for improved land for the reason that improvements which he can make with but little cash outlay add to the value and tend to keep his indebtedness down to a point which he can cover by a long time mortgage, and thus tide over years of adversity."[68]

Wallace was asked: "Can a hired man own a farm?" The editorial response included this statement:

> . . . What one man can do, another like man can do under the same circumstances and conditions. The hired man who has no great amount of heart or faith in his work will say: That might have been done twenty years ago, but it cannot now. It was easy to get a $10 per acre farm then; it is difficult to get a $60 per acre farm now.
>
> It is more difficult, of course, but nevertheless it can be done. Hired hands get better wages now than ever before. They will, under the same measure of prosperity, have higher wages than they have had in the past, provided they are the right kind of hired hands. What do we mean by that? In short, we

[64] "The Danger of Renting for Cash," *Wallaces' Farmer* 29:1136, (Sept. 16, 1904).
[65] "The Danger of Renting for Cash," 29:1126.
[66] "Renters Becoming Land Holders," *Wallaces' Farmer* 28:754, (May 22, 1903).
[67] "Renters Becoming Land Holders," 28:754.
[68] "Renters Becoming Land Holders," 28:754.

mean hired hands that will take an interest in the work of their employer, have an honest pride in it, and look after his interests on the farm precisely as they would look after their own. This type of hand can get even now about any wages that he has a mind to ask. . . . The wages for this type of man will always be high, no matter what kind of times may come.

There are some hired hands now who are laying by over and above all necessary expenses $200 per year. These men will not have to work as long as Jacob did for his two wives until they have money enough to make a good cash payment on a farm. They will not only have laid by money in the bank, but they will have won the banker's confidence which makes their money of double value. The making of the first thousand dollars, however, made honestly, is a great deal, but the development of the character and the securing of a reputation for honesty and integrity are worth a great deal more than the money, because it lays a foundation of confidence and credit that money itself cannot buy and which stands by a man all through life provided he maintains his integrity.[69]

A farmer, writing to *Wallaces' Farmer,* said:

. . . I was once a hired hand and made my start in life working by the month. I have now two hundred acres of my own. I tell you, however, that I stayed by my work. I went to town once a year.

In addition to two hundred acres of land, I have thirty head of young horses and mules, one jack, a Clyde stallion, and the rest two and three years old. I have thirty-five head of young cattle, twenty head of ewes in lamb, thirty fat hogs, forty stock hogs, a wife, four boys and four girls. My wife and I have made all this with our own hands.[70]

"Uncle Henry" Wallace certainly took the lead in arousing farmer thinking on relations between landlord and tenant. The *Wisconsin Farmer* also published many articles on the methods of renting land, particularly share renting. But *Wallaces' Farmer,* in five years, gave twice as much space to that subject as the *Wisconsin Farmer* carried in the ten years from 1895 to 1904. Much of the material in the excerpts from the *Wisconsin Farmer* is descriptive. Such phrases as: "The irrepressible conflict that lies between landlord and tenant,"[71] to "I went into partnership with a man"[72] give two approaches to the adjustment of the relation between landlord and tenant. Representative of the thinking on the part of correspondents of the *Wisconsin Farmer* is the following letter from Minnesota:

A good many men farm all their lives and yet never own a farm of their own; others begin life with little or nothing, but after a while manage to acquire farms, and eventually become well-to-do. There is some difference of opinion as to which is the better way, some contending that it is better to rent another man's land than to go in debt for land. Perhaps no rule will apply to every section of country alike, but as regards the west, I would say that I think it is much better that a man should own the farm he works than that he should rent land on shares from another. I have lived in the northwest for more than thirty years, and during all that time have lived on a

[69] "Can a Hired Man Own a Farm?" *Wallaces' Farmer* 27:66, (Jan. 17, 1902).
[70] "A Hired Man Who Got on in the World," *Wallaces' Farmer* 27:78, (Jan. 17, 1902).
[71] D. A. Kent, "The Tenant Farmer," *Wisconsin Farmer* 16:328, (May 21, 1897). Quoted from the *Iowa Homestead.*
[72] *Wisconsin Farmer* 20:638, (Dec. 26, 1901).

farm. During that time too, I have never known a man to get rich renting. On the other hand men around me who began life as poor as any renter, but who secured a piece of land, stuck right to it, after a few years became comfortable and independent. In many cases these men paid down but little on the land they bought, but they wisely considered that they might just as well pay interest as to pay rent, and the outcome has proved the soundness of their judgment.

One advantage of owning the farm one lives on is that it gives one a permanent home. This is no small advantage, for if a man can count on staying on the same farm year after year, he can lay his plans for working it to better advantage than if he was liable to be turned off the place at any time. He also escapes the sacrifices that always attend the moving from place to place.

Another advantage is, that such a man has a good place ever at hand in which to put his spare cash. He can use it either in paying off his indebtedness on the place, in improving it, or in the purchase of stock to enrich the land and himself at the same time. It is not so with the renter. He cannot keep much stock for he is not sure that next year he will be able to find a place to rent where he will be able to keep it. Many a renter squanders his few spare dollars in foolish indulgences, when if he had payments to make on a piece of land he would save up the dimes and put them where they would count in the days to come. He might seem to be more cramped for the time than if he was renting, but he would be laying up something for a rainy day and old age.

Another advantage is, that in the newer countries the owner of land makes more money, as a rule, from the advance in the value of land than from the profit of his own labor. This advantage the renter loses altogether. A large proportion of our wealthy farmers have made much of their money in just this way — by the advance in real estate. In the west where land is cheap, say from ten to twenty dollars an acre, I think it is much better for a man with a small capital to buy a farm, even if he can pay but little down, than to rent land from another. A man feels more independent; feels that he has something to work for worth while; that the work he is doing is being done for himself and his family; and this feeling makes a pleasure of much work that otherwise would be distasteful.

To live on a farm of one's own tends to the formation of habits of industry and economy. It tends to industry because a man living on a farm of his own can always find something to do in the way of improving the place; whereas, if he was a renter he would have no interest in such work, and would often be idle when he ought to be usefully employed. It tends to frugality in that a man on a place of his own can always find a good place to put his spare dollars. In the west I should say that fully nine-tenths of our farmers buy their places on time. They have their payments to make annually; and knowing this, they naturally plan how they will meet them. All this tends to economy and good management, and consequently leads to thrift and ultimate independence.

In conclusion I would say to the young man or renter: Get a piece of land of your own; pay down what you are able; be careful always to provide for the payment of interest promptly on time; be industrious and economical, and there is every reason to believe that you will succeed.

ROBERT SHARE.[73]

Note the contrast between the advice of Henry Wallace and that of Robert Share on this subject. As it turned out, increase in land

[73] Robert Share, "Rent a Farm or Own One, Which?" *The Wisconsin Farmer* 19:559, (Aug 23, 1900).

values from 1900 to 1920 made Share's advice good. Wallace's advice was good again for many years beginning with 1919.

In addition to the *Country Gentleman, Wallaces' Farmer,* and the *Wisconsin Farmer,* Taylor went through the files of the *New England Farmer, American Husbandry, The Rural New Yorker, The Ohio Farmer,* the *Indiana Farmer,* the *Prairie Farmer,* and the *Farmer's Review,* and found much descriptive material regarding the way in which farms were let to tenants, but the quotations above represent the ideas of the time. That descriptive material was summarized by Taylor in his *Outlines of Agricultural Economics.*[74]

Wisconsin Field Studies of Landlord and Tenant Relations, 1906-1907

In 1906 the University of Wisconsin (not the College of Agriculture) provided an appropriation of $200 with which to pay H. C. Taylor's expenses on a trip through southern Wisconsin and northern and central Illinois for the purpose of gathering facts which formed the basis of a bulletin on "Methods of Renting Farm Lands in Wisconsin," which was published in 1910.[75] Taylor travelled by bicycle from farm to farm getting records of the methods used in leasing land and noting the personal experiences of landlords and tenants.

In the summer of 1907 he made a tour extending through Illinois, Iowa, Indiana, Ohio, Pennsylvania, Maryland, New Jersey, Connecticut, Massachusetts, and New York, for the purpose of visiting landlords and tenants and making brief stops at the editorial offices of farm papers and in the principal libraries for the purpose of gathering material with regard to land tenure in the United States. That trip was financed out of Carnegie funds. For that tour he was equipped with a Model *N* Ford automobile. He stopped with farmers or at small-town hotels at night and visited landlords and tenants during the day and managed to move forward about 50 miles a day.[76] Taylor's method was to combine observations and inquiries with the study of the census statistics and historical materials available in the libraries.

The field study of land tenure undertaken in 1906 and 1907 by H. C. Taylor was made by the informal interview method. The interviewer started with a series of questions in his mind similar to those he had used in seeking information by correspondence. The questions were revised from day to day as new types of information became evident in the conversation with landlords or tenants. Notes were carefully made after each interview. After interviewing tenant farmers and owners throughout southern Wisconsin in the summer

[74] H. C. Taylor, *Outlines of Agricultural Economics* (New York: The Macmillan Company, 1925), Chaps. 20 and 21.

[75] H. C. Taylor, "Methods of Renting Farm Lands in Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 198 (Madison, 1910).

[76] The materials gathered on that tour were used in his book on *Agricultural Economics* (New York: The Macmillan Company, 1919), pp. 238–304. (Also in later editions.)

of 1906, until a picture of the various methods was clearly in mind and no new ideas were forthcoming, a trip was made into Illinois to note contrasts between tenures on Wisconsin dairy farms and Illinois corn farms. After the field work was completed, the notes were used in dictating a basic manuscript which contained the general interpretations and conclusions of the summer's field study as well as the detailed statements obtained in conversations with landlords and tenants. That manuscript, enriched by information obtained by correspondence and by the study of excerpts from farm journals and the more extensive tour of 1907, provided the material used in writing the bulletin published in 1910 on "Methods of Renting Farm Lands in Wisconsin."[77] That bulletin is an essay on human relations. Aside from the use of census data in showing the increase in tenancy in Wisconsin from 1880 to 1900, and two dot maps, one showing the distribution of cash tenants by counties, and the other showing the distribution of share tenants, the bulletin is without statistics. The author endeavored to put into usable form the accumulated wisdom of farmers who were experienced in adjusting the human relations which arise when one man farms land owned by another. As in Taylor's other writings, the qualities of men, both landlords and tenants, is a subject brought into the foreground. Intelligence, honesty, and efficiency are prerequisites to good relations and satisfactory results.

One idea that was brought forward in that bulletin for the first time, we believe, in agricultural economic writings, was the idea that even where the methods of renting farms on shares are firmly fixed by custom, with regard to the share received by the landlord, there may be a wide range in the realized rent depending on the quality of the tenant. A brief excerpt shows the treatment of this idea:

> In share tenancy the ability of the tenant to manage a farm is a matter which should receive more attention on the part of the landlord than the exact terms of the contract. . . . Even where the share of the product to be received by the landlord is fixed by custom, there are many points, such as the landlord's share of the poultry, the paying of the threshing bill, the twine bill, the amount of free garden land, the free use of milk for the tenant's family, the colts, the horse feed, etc., regarding which, the landlord and the tenant must bargain. Here is the opportunity for the owner to be liberal and get a good tenant.
>
> Where land is let, in accordance with the customs of the district, for one-half of the proceeds, it is often more important to the tenant that he should look out for the best farm, owned by an agreeable and far-sighted landlord, than to stand out too strongly on any small matter of detail as to what the landlord shall furnish. The same labor and capital may easily bring a return 20 per cent larger on one farm than on another in the same neighborhood, and this will more than compensate for being liberal in matters of detail.
>
> When the landlord seeks the best tenant he can get, and the tenant seeks

[77] H. C. Taylor, "Methods of Renting Farm Lands in Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 198 (Madison, 1910).

the best farm he can get, the result is likely to be that the best tenant will be on the best land, and while the tenant profits by being on the better land, the landlord profits equally by having an excellent tenant on his farm. Large numbers of farmers have mentioned this point, and they generally agree that the best tenants do get the best rented farms, and that the inefficient tenants have to take what they can get, which is usually the more sterile or run-down farms. One landlord expressed himself as follows on this point:

"If you mean by the *best tenant,* the one who takes proper care of the soil, and then makes the most money, one year with another, the best tenants are on the best land. A good tenant gets a good farm, and he can hold it. The inefficient tenant is always looking for a farm, and the landowners with good farms want only the best tenants; so the inefficient tenants are crowded to the poorer grades of land."[78]

With regard to the economic forces which determine the rent of farms, Taylor's statement, based upon the experience of landlords and tenants he had interviewed, reads:

The rent of a farm is the price paid for its annual use either in the form of money or products. The amount which should be paid depends upon the usefulness of the land and the scarcity of land of this grade. It is not always an easy matter to ascertain exactly what the "square deal" is. The amount of rent which should be given for the use of the land varies with the fertility of the land, the local market prices of products, the distance and character of the roads to the markets, the length of the term, the restrictions under which the land is to be farmed, and the probability that the tenant will improve a farm or bring about its deterioration.

In figuring on the amount which he can afford to pay, the tenant should compare the opportunities offered and the rents asked for as many farms as possible in order to select the farm which will enable him, after paying the rent and other expenses, to have left the largest possible returns for his own labor and capital.

No tenant should sign a contract until he sees clearly sources of income over and above the amount of the rent, sufficient to pay all annual expenses for labor and equipment, support his family in accordance with the standards of the community, and leave a surplus. This surplus is the ground for hope of becoming the owner of a farm. Every honest and efficient farmer will be able to make a surplus from which to save if he is on the right farm on the right terms. But this statement does not give ground for the belief on the part of every tenant who makes no surplus that his rent is too high. Before coming to such a conclusion let the tenant make sure that he is an efficient farmer. Let him compare his farming in every detail with that of other men who are making a surplus and this, if carefully done, will point to the true cause of the lack of profit, whether it be the terms of the contract or the methods of farming.

The landlord should not be over-zealous in driving a hard bargain. The landlord who drives the hardest bargain often finds himself beaten in the end. . . . Hence the following quotations, from men who have had long experiences in letting farms, are in point: "If you try to get more than a fair rental, the tenant will take more than the difference out of the property;" and again, "Do not beat a tenant before he comes, or he will beat you afterwards; give him a good 'lay,' and in the long run it will pay you best; an honest, fair way will always win in the long run."

The tenant who makes the highest bid is not always the most profitable

[78] Taylor, "Methods," pp. 13–14.

man to have on the farm. . . . A tenant can well afford to offer an extra high rent for the use of the land for a year or two if he is free to plow up the rich old pastures, produce the most exhausting crops, and take no care to leave the farm in condition for making a profit in the future. No landlord can afford to sacrifice his capital for the sake of reaping a high rate of interest on his investment for a short time. It is very important, therefore, that the conditions of farming should be such as will guarantee that the farm will be returned to the landlord in as good condition as it was at the beginning of the tenancy. This is not a matter that can be provided for perfectly in the contract, even if the tenant gives bond. To have to appeal to the law to enforce one's rights is always unfortunate. It is better to take a smaller rental from a fair-minded man who can be trusted to do the right thing, than to take chances on a man of doubtful character.[79]

The details of that bulletin are in some measure obsolete, but the homely philosophy expressed by the farmers and recorded in the bulletin retains its value. The student of more recent years may ask why Taylor did not draw up a balance sheet showing the facts with regard to costs and income as a basis of indicating whether or not the division of the proceeds was equitable. Taylor was in the same position that Henry Wallace was in — he did not have those facts and did not have the means of making the surveys essential to collecting the facts.

Cornell Field Studies in Land Tenure

Farm management surveys provided facts with regard to methods of renting land and also with regard to the net amount actually received by landlord and by tenant. The classic in agricultural surveys in the United States — the Tompkins County, New York, survey made in 1908 — contains some facts with regard to landlord and tenant returns under different systems of renting land. The following excerpt gives facts and opinions as stated in that bulletin:

Relation of systems of rental to profits — The tenants who paid cash rent made an average labor income of $604, almost twice as large as the average of those who gave half of the receipts, $342. The landlords who rented for cash made 5.2 per cent interest. Those who rented for half the receipts made 9 per cent. There are not enough farms rented for half the crops to give a reliable average.

With cash rent, the tenant must furnish more capital and must take more risk. But this is usually much better for the tenant, if he has money enough.

When the landlord shares in the receipts from stock, he usually gives considerable attention to the farm, and assumes considerable risk. His percentage is not all for interest; part of it goes for care and risk (Table 108).

Half of the crops are usually paid for the labor of growing them. A tenant may make money if he sells these crops. But if he furnishes half the feed for average cows and gets half the milk, he gets very low wages for the additional work.

If an owner feeds $60 worth of feed to a cow whose product is worth $65, he gets milk for home use, $5, and the manure to pay for labor, interest and depreciation on cows, buildings, etc. The chief of these items is labor. On ten such cows, he would receive $50 above the cost of feed.

[79] Taylor, "Methods," pp. 11–13.

But if a tenant furnishes the labor and half the feed for ten such cows, he gets only $25 for this part of his year's work. If he leaves the farm in the spring he receives no benefit from the manure. Probably he spends nearly half of his time taking care of ten cows, hauling milk, etc. It is evident that the cows must be better than average cows if a tenant is to make anything when he shares the receipts from cows. Either the cows should be unusually good ones or there should be few of them if the tenant is to make money.[80]

TABLE 108

RELATION OF SYSTEM OF RENTAL TO PROFITS AND OTHER FACTORS

Form of rental	Number farms	Capital		Tenant's labor income	Landlord's per cent on investment	Years of occupancy	Yield of	
		Tenant's	Landlord's				Oats	Hay
							(*Bu.*)	(*Tons*)
Cash.....	29	$1,584	$3,659	$604	5.2	4.4	31	1.29
Half crops..	6	1,177	3,629	467	12.4	5.0	32	1.09
Half receipts	109	1,264	5,667	342	9.0	5.5	31	1.31

Thus in the first farm management survey of the Cornell type an effort was made to find a quantitative statement of the distribution of the net proceeds of the rented farm under different forms of tenure. In commenting on the fairness of the division of the proceeds between landlord and tenant, Warren said:

In Tompkins county, New York, about three-fourths of the rented farms have such a combination of crops and stock as to result in a fair division of the profits. But about one-fourth are unfair to one party or the other. There were such cases as a tenant making a labor income of $835 when the landlord made less than 3 per cent. At the other extreme a landlord made over 20 per cent when the tenant made a labor income of only $142. A considerable number of landlords made over 10 per cent when the tenants made less than hired-man's wages. Most of these were cases where the tenant spent most of his time milking cows and raising potatoes for half.

When the landlord pays for half the feed for productive stock, half the seed, fertilizer, etc., and gets half the receipts, he really pays for part of the labor cost. He furnishes the houses and half the milk and other products that are given to men. He furnishes the barn for horses, and usually furnishes half the hay that horses eat, so that he pays part of the cost of horse labor. And since he furnishes part of the cost of man labor, he really pays for part of the time that men spend on horses. Part of the machinery cost falls to him because he furnishes the barns to house machinery and part of the man and horse labor to care for machinery.[81]

United States Office of Farm Management Tenure Surveys

In the same year that the Tompkins County bulletin was published, E. H. Thomson and H. M. Dixon, of the Office of Farm

[80] G. F. Warren and K. C. Livermore, "An Agricultural Survey: Townships of Ithaca, Dryden, Danby and Lansing, Tompkins County, New York," Cornell Agr. Exp. Sta. *Bulletin* 295 (Ithaca, 1911), pp. 541–42.

[81] G. F. Warren, *Farm Management* (New York: The Macmillan Company, 1913), pp. 326–27.

Management of the U. S. Department of Agriculture, made a farm management survey in Indiana, Illinois, and Iowa, in which the incomes of landlords and of tenants were tabulated:

INCOMES RECEIVED BY FARM TENANTS

There are few regions in the United States where tenant farming has been developed so extensively and where it plays such an important part in agricultural production as in the corn belt. The percentage of farms worked by tenants is second only to those operated by owners, and the areas farmed and the products grown compare very favorably with those of the farm owners.

In the region covered by this survey, records were secured from 247 tenant farmers. These men rented one farm, or land owned by one person. . . .

TABLE IV

AVERAGE CAPITAL, RECEIPTS, EXPENSES, AND PROFITS OF TENANTS ON 247 FARMS OPERATED BY TENANTS IN INDIANA, ILLINOIS, AND IOWA

Item	Indiana (83 farms)	Illinois (71 farms)	Iowa (93 farms)	Average (247 farms)
Average area . . . . . acres . .	128	202	187	172
Average capital	$1,758	$2,867	$2,667	$2,431
Average receipts	1,335	2,257	1,605	1,732
Average expenses	492	975	755	740
Average farm income	843	1,282	850	992
Average interest at 5 per cent	88	143	134	122
Average tenant's labor income	755	1,139	716	870

Most tenants hope to become farm owners as soon as they have sufficient capital. The income they receive while leasing a farm is a measure of the period they will have to work before making the change. . . .

The 247 tenant farmers made an average labor income of $870 from an investment of less than $2,500. When it is remembered that the farm owners with over 12 times this investment made less than half the labor income of the tenants, the evidence is unmistakable that the man with small capital should rent rather than buy a farm. . . .

In addition to this sum available for a living each has what the farm furnishes in the shape of produce. After the tenant pays his living and personal expenses out of this amount his savings can not be large. If we allow the owners 3.5 per cent on their investment instead of 5 per cent they would then receive approximately the same labor income as the tenants ($870). This percentage is the same as that received by the landlords from the rented farms. Taking into consideration the results from all the farms managed by owners and by tenants, they show that a return can be expected of 3.5 per cent on the investment and a labor income of $870. . . .

INCOMES RECEIVED BY LANDLORDS

The farm, in the case of the landlord, is a business investment. He furnishes the capital, largely in the form of land, and the tenant furnishes the necessary labor and other means for its operation. The average invest-

ment of the 247 landlords for the three States studied was $25,210. The average net income on the capital invested was 3.5 per cent. All items of expense, including repairs, seeds, taxes, and insurance, were deducted before figuring the net returns. Table V gives the average capital, receipts, expenses, and returns for the landlords in each State.

TABLE V

AVERAGE CAPITAL, RECEIPTS, EXPENSES, AND PROFITS OF LANDLORDS FOR 247 FARMS OPERATED BY TENANTS, AS SHOWN IN TABLE IV

Item	Indiana (83 farms)	Illinois (71 farms)	Iowa (93 farms)	Average (247 farms)
Average area.....acres	128	202	187	172
Average capital.....	$18,423	$36,479	$20,728	$25,210
Average receipts.....	1,002	1,538	1,014	1,185
Average expenses.....	351	213	354	306
Average farm income.....	651	1,325	660	879
Average profit on investment* per cent.....	3.53	3.64	3.19	3.5

* Obtained by dividing the farm income by the average capital.

The average return on investment from the farms in Illinois was 3.6 per cent, in Iowa 3.2 per cent, and in Indiana 3.5 per cent. . . . In computing this income no credit has been allowed for the rise in value of real estate, except in case of actual improvements.

. . . The landlord who is receiving 3.5 per cent net from his farm, with the bare land figured at $150 or more an acre, has a good, safe investment.[82]

The method of comparing the tenant's labor income with that of an operating owner with interest deducted from farm income at the same rate the landlords are receiving appeared to the authors to be a useful criterion in determining the fairness of the division between landlord and tenant. There is, however, one statement in the bulletin which casts some doubt upon this conclusion. It seems that on the whole the tenants are more alert than the operating owners and therefore should have a larger labor income. The statement referred to reads:

. . . We do not find the gross inefficiency among the tenants, for they must earn the rent which goes to the landlord, and if they receive nothing for their labor they can not live. They have no interest on which to live, as does the farm owner with a large investment. The country would be benefited if the few inefficient farm owners on the large farms were persuaded to rent their farms to enterprising tenants. They would still have as much or more than they are now getting, and the tenant would have a good living.[83]

[82] E. H. Thomson and H. M. Dixon, "A Farm-Management Survey of Three Representative Areas in Indiana, Illinois, and Iowa," U.S.D.A. *Bulletin* 41 (Washington, 1914), pp. 11–13.

[83] Thomson and Dixon, "Farm-Management Survey," p. 18.

The return of 3.5 per cent which landowners were earning on their investment in land gives a measure of the significance of the retarding influence of the difference between the then current rate of interest on farm mortgages and the net earnings on investments in land, upon the acquisition of landownership by farmers.

Iowa Farm Leases Surveyed

In 1913 O. G. Lloyd made a study of tenancy in Iowa in which he undertook to bridge the gap which had been left by Henry Wallace and by H. C. Taylor. Lloyd used the farm survey method of studying expenses and incomes of landlords and tenants on 114 farms with a view to determining the fairness of returns to each. The results of the study, covering the year 1912, were published in 1915.[84] In addition to making a survey of those farms to determine farm income and labor income of the tenant and the return to the landlord, a study was made of land prices, rental rates, and the rate of interest on time deposits and on farm mortgages as a basis for determining what is a fair division of farm returns. The bulletin also described various methods of renting land in Iowa and included copies of leases which call for "a fair division of the farm returns" as shown by the study. Lloyd's idea was that fairness of rent could be determined by finding the net income to each party to the contract and comparing these incomes with alternative incomes which each party might receive by a different use of capital and effort. Under the subtitle "Fair Division of Returns," Lloyd said:

> A satisfactory lease not only calls for profitable farming to insure the highest returns, but it also requires a fair division of these returns between the landlord and the tenant.
>
> The fairness of the returns is best measured in terms of net income. The net income of the tenant is his labor income and the living the farm furnishes him, such as free house rent, garden, poultry, meat and dairy products. The landlord's net income includes rent and the advance in the price of land.
>
> The present net income of the tenant is . . . more than three times the net income of the farm laborer, while the net income of the landlord is about 8.5 per cent, or more than double the present time deposit rate of 4.1 per cent. These are adequate returns to both the landlord and the tenant for the use of labor and capital and as pay for the risk and management each assumes.[85]

Did Lloyd use good criteria in deciding what was a fair division?

With regard to the relative merits of the prevailing forms of farm leases, Lloyd said that his studies showed:

> . . . that stock-share renting encourages the most profitable types of farming and maintains the fertility of the soil. It is desirable for further reasons. Too often the landlord and the tenant work against each other rather than for one another. Stock-share renting helps to break down this barrier and replace it with co-operative effort. Every dollar made for the farm business

[84] O. G. Lloyd, "Farm Leases in Iowa," Iowa Agr. Exp. Sta. *Bulletin* 159 (Ames, 1915).
[85] Lloyd, "Leases," pp. 165–66.

is shared equally and the advance of the interests of one means prosperity for the other. These common interests promote fellowship and confidence and the farm business is not only profitable but pleasurable. . . .

Two principal reasons for the success of stock-share renting are adequate capital and capable supervision furnished by the landlord. When the stock-share tenant accumulates adequate capital and capable supervision so the assistance of the landlord is no longer needed, it is to the interest of the tenant to rent for cash. In assuming more risk and supervision he acquires more liberty in equipping and managing the farm and obtains a larger labor income. It may be necessary for him to move to another farm, for the stock-share landlord will probably wish to follow the same method of renting and will not care to rent for cash.[86]

The following table is of particular interest in showing how much less the landlord gets where cash rent is paid.

Tenant's Labor Income and Landlord's Per Cent on Investment Under Different Methods of Renting

Method of renting	No. of farms	Tenant's labor income	Landlord's per cent on investment	Tenant's labor income at 4.1% rental rate
Stock-share	54	$1,291	4.1	$1,291
Cash	21	1,729	2.3	1,156
Share-cash	32	1,120	4.1	1,120
Bushel	7	578	4.4	683

Summarizing the data which show that satisfactory methods of renting are associated with profitable farming and a fair division of the returns:

That method of renting should be more generally used which supplies adequate capital and capable supervision to equip and manage the farm.

In stock-share renting the landlord provides half or more of the productive live stock, retains part of the supervision and divides the net receipts; the cash tenant pays a certain price per acre or "lump sum" for the farm; in share-cash, a share of the grain and cash for hay and pasture land is paid, while the bushel tenant receives 15 cents per bushel for all the corn he raises.

Stock-share and cash rented farms have more than one-half larger business than farms under the other methods of renting and have one-fourth larger farms and more labor per acre.

Stock-share rented farms have three times the number of stock kept on bushel rented farms and obtain one-third higher corn yields.

Tenants remain on the same farm the longest time when renting under the cash and stock-share plans. On these farms approximately a half more capital, one-fourth more labor income, twice as valuable farm buildings and three times as valuable a house are found as on other rented farms.

. . . On stock-share rented farms, 50 per cent more capital in buildings is used than on other rented farms, and more than 20 per cent more capital other than land and buildings. . . .

Considering the risk and trouble in each method of renting, the stock-share method is more fair than any of the other methods of renting.[87]

[86] Lloyd, "Leases," pp. 183–84.
[87] Lloyd, "Leases," pp. 184–85.

Minnesota Studied Farm Leases

In 1918 the Minnesota Agricultural Experiment Station issued a bulletin on farm tenancy in which the Station's cost accounting data were drawn upon to determine whether the landlords and tenants were sharing the expenses in the same proportion in which they were dividing the proceeds. The assumption is made that "The proper basis for a fair and equitable share lease is that each party share in the products of the farm in the proportion that he shares in the cost of production."[88] Without testing this assumption, the author of the bulletin constructed tables drawn from available cost accounting data to show the part of the costs paid by each party to the contract under the different systems of share renting. The conclusions were summarized:

> Calculations made for present conditions indicate that three fourths of the expense of maintaining a work horse is the cost of feed, and on the assumption that the owner is furnishing one half the horse feed, he is charged one half of this or three eighths of the total cost as his share in the cost of horse labor. . . .
>
> Under the one-third share system for small grain there is a large variation from one locality to another in the proportion of the cost borne by landlord and tenant. The landlord contributes more than one third on high-priced land and less than one third on lower priced land. Under the half-share system it will be noted that the landlord contributes in most instances a little more than the tenant in the production of oats, wheat, and barley. It is not desirable to change the division of crops from the half-share basis, but the cost of production may easily be equalized by having the tenant bear a portion of the cost of seed. Where a considerable acreage of corn is grown, such an equalization would not be so applicable, for altho the landlord bears more than one half of the cost of production of small grain on the half-share basis, the tenant bears a much larger proportion of the cost of producing corn. As there are usually three or four times as many acres of small grain as of corn, the larger proportion of expense to the landlord on small grains tends to equalize the larger proportion of expense to the tenant on the corn crop.
>
> . . . If the corn crop is divided on the half-and-half share basis there is a decided advantage in favor of the landlord, ranging from $2.49 for husked corn, at Northfield, to $8.70 for corn cut, shocked, and stacked, at Halstad. If corn is husked and cribbed by the tenant and he receives three fifths of the crop, the division is much more nearly in line with his proportion of the cost of production. The tenant also gets the use of the cornstalks, which are usually considered worth at least $1 per acre if the tenant has cattle to feed.
>
> If livestock is fed on a share basis and corn is used for silage or is cut, shocked, and stacked, or fed from the bundle, the tenant contributes considerable more than the landlord and should be compensated in some way if the crop is shared on the half-and-half basis. This may easily be done in putting up silage by the landlord paying for part of the man labor required.
>
> Clover and timothy hay put up by the tenant on a half-share basis gives nearly an equal division of the expense for the first crop on the higher-priced lands. If more than one crop is cut, it is decidedly in favor of the landlord

[88] A. H. Benton, "Farm Tenancy and Leases," Minnesota Agr. Exp. Sta. *Bulletin* 178 (University Farm, St. Paul, 1918), p. 24.

since he has little or no additional expense. It must be remembered, however, that the landlord must stand all the risk of crop failure while the tenant's only expense is for harvesting, and for this reason a half-share division of the crop is much more just than would appear on first reading the data. . . .

The relative amount contributed by the landlord and tenant to the cost of raising beef cattle, hogs, and sheep on a half-share basis can not be easily calculated, but the furnishing of pasture by the landlord is considered as an offset to the labor furnished by the tenant. The landlord frequently feels he is contributing further by furnishing better housing facilities, which tend to increase his share of the cost.[89]

A table was prepared which summarized the findings:

. . . [under the] usual half-share system, and also under the system where everything is shared half and half. Under this latter system the landlord bears considerably more than half of the cost of producing small grain, but the cost of producing corn is as near equal as a share rental system could be expected to provide. The tenant still bears more than half of the cost of maintaining the dairy cows, but the difference is not so wide as where the usual half-share system is followed. No one share system will meet all conditions. At Northfield, where land rent is relatively high, all other costs being the same, the owner furnishes more toward the production of an acre of crops than at Halstad, where rents are 50 per cent lower.[90]

In the Minnesota calculations nothing is said about the contributions made toward the management of the farm by each party to the contract. This point was developed by John D. Black the next year at a meeting of the American Association for Agricultural Legislation, December 29–31, 1919. At that meeting Black presented a discussion of the division of the farm income between landlord and tenant, in which he showed the inadequacy of the accounting method as it has been applied.[91] Black's discussion related primarily to the way in which the supply-demand price forces work themselves out in determining the amount paid for the annual use of land.

The matching of the landlords' supply schedule against the tenants' demand schedule as these two exist at the time gives us, if not a price point, then a general level of rents for that moment. . . .

The fact of the matter is that the supply-and-demand price very frequently is not a proper price, and this is true whether we are talking about rents or milk prices, and the reason for this is that competition is seldom entirely free. One reason that competition is not free is what is usually called economic friction. . . . tenants, as has already been pointed out, are not always free to buy farms whenever rents are high relative to prices of land. They may not have enough capital saved. Once tenants have started out to work their way to farm ownership, if they turn aside to new and more profitable occupations they will lose the advantage of all their years of experience and preparation for ownership. . . . Custom and family ties make laborers and tenants bid more for land than they should so as to stay in their native communities. . . . Landlords also suffer from economic friction. Sometimes they cannot sell their farms readily when rents are too low. . . . The result of all this is abnormal

[89] Benton, "Farm Tenancy and Leases," pp. 30–33.
[90] Benton, "Farm Tenancy and Leases," p. 33.
[91] J. D. Black, "The Division of Farm Income Between Landlord and Tenant," American Association for Agricultural Legislation, *Proceedings*, 1919 (Madison, 1920).

demand and supply schedules and abnormal rents, either high or low depending upon the particular combination of circumstances which maintains.

Another way in which economic friction affects rents is by keeping the right tenant from getting on the right farm. A poor tenant cannot pay as much rent for a good farm as a good tenant. A good tenant who gets onto a poor farm may pay more rent for it than he should. If there were no economic friction all the good tenants would get on the good farms, and the poor tenants on the poor farms, and rents would be adjusted accordingly.

Closely allied to economic friction in this respect is bargaining. Where all the buyers and sellers get together in one place at one time and buy a standardized commodity, as upon the grain exchanges, then all pay the same price for the same grade of grain at the same time. Rental bargains are almost always privately made. There is chance for almost endless higgling over the quality of the land and improvements. The character of landlord and tenant are as important as the land. Nominal terms after all are not the real terms of rental contracts. A landlord may be better off renting for $500 to one tenant than for $1000 to another. For all these reasons, bargaining plays an important role in determining what rents any tenant shall pay and any landlord receive.

In transactions of this kind, the skill of the bargainer is all important. It is safe to conclude that the landlord is likely to have the advantage here because of his greater age and experience and knowledge of the farm being rented. The other factor in successful bargaining is bargaining vantage. Which party needs most to make the deal? If good tenants are scarce and farms for rent many, the tenant is likely to get the better of the bargain. Or if good farms are scarce, the landlord will have the better of it. If it is a matter of renewing a lease, the tenant is likely to bid more to save moving from a good farm than the landlord will bid to keep him. On a poor farm, the opposite may be true. Tenants who are short of capital are pretty sure to be placed at a disadvantage in bargaining. They frequently have to be satisfied with poorer farms than their ability as farmers warrants. . . .

Custom also has its influence upon rents in many sections of the country. Whenever rents remain at somewhere near the same level for a few years, the people come to accept these rents as proper rents, to make their bargains unthinkingly in terms of them, and to insist that any other rents are unfair. . . .

Wherever there is economic friction or custom, some monopoly power is always possible. Landlords have seldom been known to get together as a class in common assembly and agree upon terms or leasing arrangements. They do, however, stick together pretty well on the terms which they have come to look upon as customary or as justified by changing conditions, and this sticking together is monopoly. . . .

The foregoing is an explanation of contract or market rent and the reasons why it differs from economic rent. Whenever competition is entirely free, when tenants and landlords are free to change at once when economic changes put them at a disadvantage, when landlord and tenant contract with each other, in complete knowledge of the land and the market, and each equally free to stay out of a deal, and when custom and monopoly are in abeyance, and contracts are made a year at a time, and when the right grade of tenant gets the right grade of farm, then the rents which are actually paid will be *economic rents*. But such conditions seldom, if ever, prevail.[92]

This analysis of the problem with some other refinements was followed in Black's address by a discussion of methods used to deter-

[92] Black, "Division of Farm Income," pp. 8–11.

mine the fairness of rents by comparing the contributions and the incomes of landlord and tenant. Black pointed out that such calculations were of little value because of the use of averages which did not fit the particular circumstances and by assuming five per cent interest in making calculations when the actual net return to landlords was only about half that amount. Another difficulty in determining the fairness of the rent on a given farm owned by a given landlord and operated by a given tenant was the lack of means of measuring the value of the managerial contributions of each party.

> . . . if landlords' and tenants' incomes are to be adjusted according to what each contributes, the charges for the farmer's labor and management must be separated, for one party furnishes the labor and only part of the management, and the other party, the landlord, furnishes the rest of the management. Moreover, the amount and quality of management furnished by each must be measured. The differential for wages of management even in agriculture is enormous. Frequently a tenant whose management has a negative value is matched with a landlord whose management is worth a thousand dollars or more a year. Our attention is frequently called to landlords who graduate a new owner every few years. These landlords are furnishing their tenants with high quality management. Other tenants furnish management worth greatly more than their landlord's. In some cases, something like a market value for the tenant's share can be obtained by combining his labor and management and finding what the two together could be hired out for; but as for the value of the landlord's management, the case is hopeless. Therefore the plan of adjusting the shares and expenses according to particular situations is exceedingly difficult to work out accurately. . . .
>
> . . . No tenant who is a good manager can long afford to rent at share rent under the usual terms. . . .
>
> . . . As we have shown, management is usually a far larger item of expense than the farmer's labor. And we have no way of placing a value on the landlord's part of this management. . . .
>
> . . . Following are two plans. . . .
>
> 1. Follow the custom as far as possible, and when not possible make allowance for it in some other part of the lease. . . .
> 2. Count the tenant's labor and management, family labor and hired labor, and interest, taxes, depreciation and upkeep on his equipment, as equal to the landlord's management, interest, taxes, upkeep and depreciation on real estate and equipment. Divide the other expenses half-and-half, by estimating their amounts in advance, or by settlement afterwards.[93]

Thus in the end Black fell back upon two rules of thumb to be modified by bargaining. Yet Black's idea of analyzing the problem in advance of seeking measurements was admirable. The quantitative data adequate for drawing conclusions as to the fairness of any given contract need to be based upon the specific case. The budgeting system should include this form of case study. Only patient continuation of analysis, re-analysis, and new fact gathering on the basis of revised hypotheses provide the means of approach to the measurement

[93] Black, "Division of Farm Income," pp. 19–21.

of the fairness of the way in which the income from rented farms is divided. The greater the number of measurable elements and the fewer the elements which must be guessed at, the greater the prospect of putting rents on a rational and easily adjusted basis rather than on an inflexible customary basis.

While the four studies made by Cornell, the Office of Farm Management, Iowa, and Minnesota, provided interesting facts about the distribution of the net income of rented farms between landlords and tenants, they did not provide well developed criteria for determining a fair division on the basis of facts. After all, that is an area of the national economic life where competition and custom function side by side. Some elements in the rental contract may be bound by custom while others are open to bargaining where tenants are competing for land and landlords are competing for tenants. As Warren indicated, there are many items in the contract on which a good tenant may drive a good bargain if the landlord realizes the value of, and is willing to make concessions in order to get, a good tenant.

B. H. Hibbard on Land Values and Land Tenure

In the year 1911 B. H. Hibbard (on leave of absence from the Iowa State College) assisted in preparing the United States census of 1910 for publication. During that year he considered the subject of farm tenures. He published an article[94] in which he pointed out the influence of the high prices of land and speculation in land in retarding the purchase of farms by young farmers and thus increasing the percentage of tenant farmers. But Hibbard also pointed out that certain types of farming (grain farming and truck crop farming were given as examples) lend themselves to tenant farming better than do fruit farming or livestock farming. To quote:

> . . . In implements and machinery the tenant has a little less than his proportional share; tho this is due in the main to the fact that he is less in need of such things as haying tools, corn binders, or milk separators than is the land owner. Tenants are seldom handicapped by lack of implements. The tenant farmer himself is much younger than the owner; he stays on the same farm not to exceed about a third as long a period of time as does the owner. These facts are all significant. They picture a farmer with a poor outfit of buildings, with comparatively little grass land, with little live stock, giving his attention to the growing of grain to be hauled immediately to market. The one exception to this condition is the feeding of much of his corn to hogs.
>
> If these conditions are accurately outlined they present a reason other than the high price of land for the concentration of tenancy on the better land. The tenant is not equipped for doing the more exacting work of stock farming. He lacks the capital with which to begin. He wishes to engage in a business which will yield returns during the year, not after a period of years. . . . These conditions cause the tenant to gravitate toward the section where the type of farming for which he is fitted, and which meets his needs,

[94] B. H. Hibbard, "Tenancy in the North Central States," *Quarterly Journal of Economics* 25:710–29, (August 1911).

can best be done. This means a district adapted to the growing of grain, especially corn.[95]

Two maps were prepared.[96] One showed corn production per square mile; the other showed the percentage of tenancy in the Corn Belt. The two maps looked much alike for the high percentages of tenancy and the high concentration of corn production coincided. The cotton area map and the tenancy map showed a similar resemblance.[97]

From two different standpoints, then, the same facts are discovered. High price of land and high rate of tenancy go hand in hand, likewise low price of land and low rate of tenancy. . . . With the growth of population and the consequent demands for more foodstuff the value of land has followed the rise in the prices of its product. But the land which responds best to immediate demands rises most. As a result the fertile land capable of producing good crops without the use of high-priced fertilizers, or great outlay for drainage, rises first and highest. And while this movement is in progress there is a process of natural selection by which the less efficient farmers are shifted to the cheaper land of the outlying districts; or if they remain, they, or more likely their sons, are within their own neighborhoods relegated to the class of tenants. Speculation is still prevalent in the sections of high-priced land, and is a great factor in keeping the price so high that ordinary commercial returns cannot be made on the investment except by men and methods above the average. This is in itself one of the primary causes of tenancy. Such a sifting and shifting does not take place in the sections where land is less well adapted to exploitation and less attractive to speculators; hence the less efficient may retain ownership. At the same time the type of farming adapted to these sections favors the efficient.

These conclusions are borne out by the fact that within the districts of high-priced land the farmers practising the intensive methods or the rational method of diversification are those who in great measure own the land they till. In the parts of Iowa, for example, where dairying is most prevalent, even tho the price of land is high, tenancy is relatively low. The same is true of the intensive farming, such as truck and fruit growing. It can be done, and is done, on high-priced land without the aid of a separate landlord class. Hence the conclusion seems inevitable that the system of farming is a factor equally important, if not more important, than the price of land in turning the scale in favor of ownership or in favor of tenancy. Those who engage in what is called the mining type of farming are losing their hold on the soil. Those engaged in a more profitable type are retaining it to a much greater degree. Whatever forces raise the value of land make greater demands on the farmer who aspires to its ownership. Whatever increases the efficiency of the farmer makes ownership more probable. The extensive pioneer methods of farming succumb in the face of great waves of rising prices.[98]

The next year Hibbard reviewed some of the statements given above and enlarged the area. He said:

With the possible exception of the Negroes of the South there is no tenant class of farmers. That is to say, there are no considerable numbers of

[95] Hibbard, "Tenancy in the North Central States," 25:721, 723.
[96] Hibbard, "Tenancy in the North Central States," 25:722.
[97] Hibbard, "Tenancy in the North Central States," 25:723.
[98] Hibbard, "Tenancy in the North Central States," 25:728–29.

farmers who look upon themselves, or who may properly be looked upon, as probable life-long tenants. . . .

Viewing the geographic divisions of states separately it is to be seen that the proportion of tenant farms follows in many cases quite closely the value of land per acre, in other cases the value of farms as units, while in still other cases the determining factor seems very clearly to be the character of the farming to which the district is adapted. . . .

. . . the highest proportion of tenancy is found in connection with land highest in price within the states in which general agriculture predominates. For example in Pennsylvania, by dividing the counties into three groups on the basis of land values, it is found that in the group of highest price, 29 per cent of the farms are operated by tenants, in the group of medium price, 21 per cent are so operated, and in the group of lowest priced land the percentage is 16. A similar situation is found in New York, except that the difference between the first and second groups is very much less. . . .

Tenancy is not necessarily bad, though as found in this country it has some very undesirable features. The tenant is a transient, and it is useless to insist that the contract should be made for a long period of years. The landlord himself, who often complains because tenants move so frequently, usually wants to reserve the right to sell his land, and terminate the lease with the sale. The majority of northern landlords are speculators in the sense that they are watching for a chance to sell or buy farms whenever opportunity for profit in doing so presents itself. This being the case tenant problems are subsidiary to the speculative program. It will be difficult to evolve a good system of tenancy while this condition lasts. . . .

. . . Unquestionably the status of the tenant is better than that of the laborer who works here and there by the day, and, for the most part, better than that of the regularly employed laborers. . . .

. . . On the other hand, tenancy often makes ownership possible. A better credit system, and a more economical means of marketing farm produce and buying provisions and supplies would go a long way toward enabling the tenant to buy land at an earlier period of life. . . .[99]

After five more years of observation, study, and reflection, Hibbard again presented his views. We quote:

. . . The question may very properly be asked why so many farms should be farmed by others than their owners. . . .

. . . Farmers remain tenants because they find the price of land high, or sometimes it may mean that the price of the farm is high not so much because of high price per acre as because it requires many acres to make an efficient unit. . . .

. . . land rentals have been capitalized at a low rate of interest and in consequence land values are high. Rentals do not rise as readily as the selling value of land and, therefore, other things being equal, it is cheaper to rent land than to buy it. . . .

The question may well be asked whether tenancy is or is not compatible with the maintenance of soil fertility. . . .

It cannot be held that the fertility is being maintained on the great majority of rented farms. In the very best parts of the country the contrary is the case. . . .

The laws at present do not protect the tenant in his right to improvements. . . .

[99] B. H. Hibbard, "Farm Tenancy in the United States," American Academy of Political and Social Science, *Annals* 40:29, 31–32, 38, 39, (March 1912).

What then is the outlook? Is America doomed to become a nation of landlords and tenants? True, the proportion of tenants is on the increase. . . .

The tide will turn in favour of ownership if ever we reach the stage where the speculative value of land disappears; where few farmers are able to retire on the basis of wealth accruing through unearned increment; and where, therefore, land is worth a sum based on its productivity.

This is on the assumption that a system of agricultural credit favourable to the farmers will in the meantime be worked out. One of the main reasons why it seems safe to suggest that these conditions will result in ownership rather than tenancy is because it is not likely that any system will soon be devised whereby the fertility of the soil will be as well conserved under a tenant system as under a system of ownership.[100]

The Agricultural Ladder

Early in the twentieth century, the phrase "agricultural ladder"[101] became current in the discussion of the progressive movement from hired farm hand to landowning farmer. In 1898 H. C. Taylor had used the word "stages" in this connection. He said, "While tenancy and incumbered ownership are the stages through which great numbers of young farm laborers pass in becoming free owners of farms, there are certain causes operating which retard this transition."[102]

Just when the phrase "agricultural ladder" was first used at Wisconsin is not a matter of discovered record. Ely, Hibbard, and Taylor were often together. They often talked of subjects relating to land tenure. We do know that the phrase was in use at the University of Wisconsin in 1916. In December of that year Taylor used the phrase in a paper read at the twenty-ninth annual meeting of the American Economic Association held at Columbus, Ohio.[103]

The ladder cartoon was originated by Taylor and used as a lantern slide by him in one of his lectures[104] at the Farmers' Short Course at the Texas Agricultural College in July of 1917. The cartoon indicates advancing years as the climber gains one stage and strives for the next. In speaking of the cartoon, while exhibiting it on the screen, Taylor said:

> . . . The accompanying illustration of the climbing of ladders from the boy apprentice through the hired-man stage to the successive position of the tenant farmer, mortgaged owner and owner free of debt, to the independent position of the retired farmer who is a landlord, I believe illustrates what is actually going on in the United States at the present time. Anything that will facilitate the climbing of these ladders will increase the percentage of landowning farmers; anything which will retard this movement will result in an increase in the percentage of tenancy. Bear in mind that in order for tenancy to increase it is not necessary that any farmer who has once owned his land

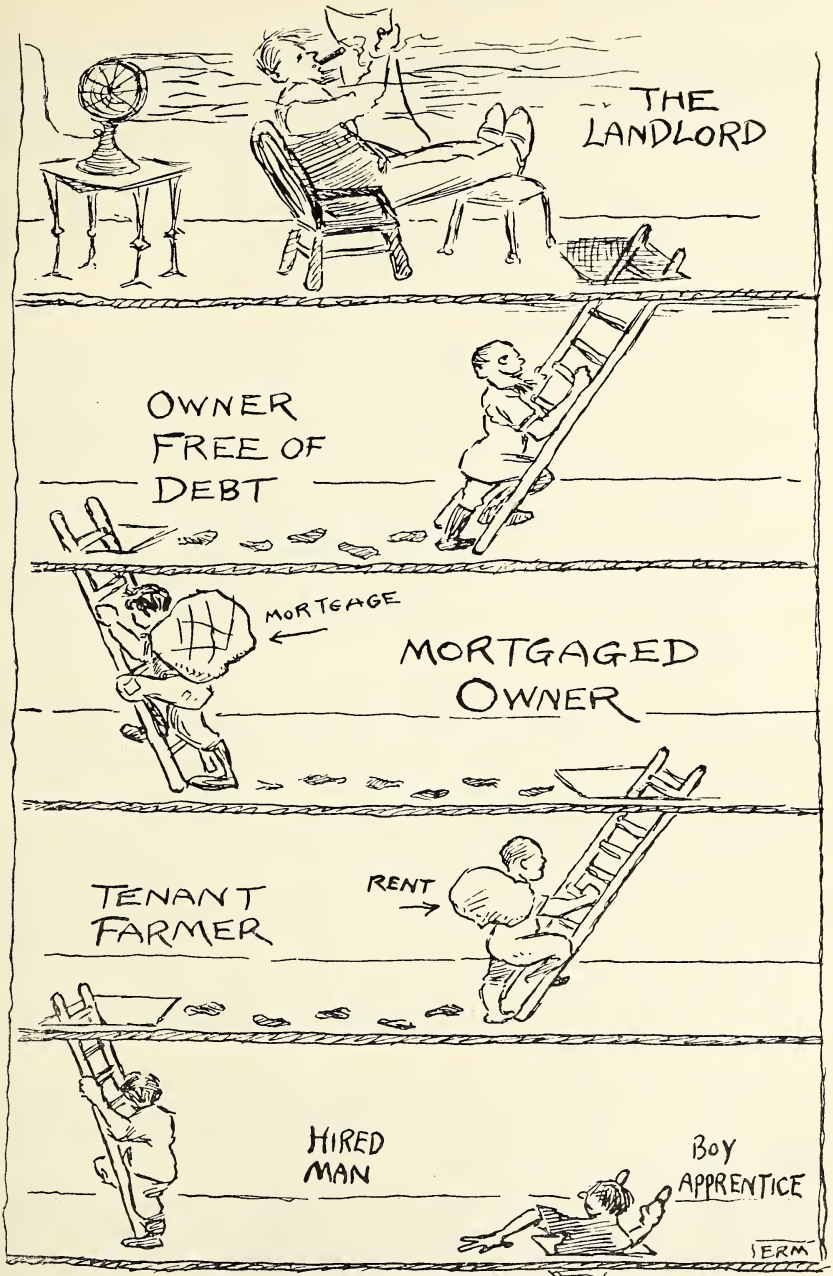
[100] B. H. Hibbard, "Farm Tenancy in the United States," *International Review of Agricultural Economics* (Monthly Bulletin of Economic and Social Intelligence, published by the International Institute of Agriculture, Rome), 76:91, 96–99 (April 1917).

[101] See Shu-Ching Lee, "The Theory of the Agricultural Ladder," *Agricultural History* 21:53–61, (January 1947).

[102] Taylor, "Tenancy and Farm Ownership." (See *supra*, p. 776.)

[103] See H. C. Taylor, "Two Dimensions of Productivity," *The American Economic Review, Supplement* 7:54, (March 1917).

[104] H. C. Taylor, "Lectures on Land Tenure," Texas Agricultural College, Eighth Annual Farmers' Short Course, *Proceedings*, 1917, p. 261.



The Agricultural Ladder

should encumber it with a mortgage and finally lose it because of indebtedness. In order to increase tenancy it is only necessary that the acquiring of land on the part of the younger farmers shall be slowed down. New people are entering the pursuit of farming every year and many people are leaving the pursuit every year. This is the natural process due to the passing of generations.[105]

W. J. Spillman and E. A. Goldenweiser prepared an article on "Farm Tenantry in the United States" for the U. S. Department of Agriculture *Yearbook* for 1916. The authors said:

> Tenantry is one of the normal steps by which young men with limited capital become farm owners. . . .
>
> . . . that 5.9 per cent of the present owners acquired their farms through inheritance; 13.7 per cent are farming land obtained under the homestead act; the remaining 80.4 per cent bought the farms they now own, three-fourths of them on deferred payments averaging 44 per cent of the total purchase price, the other fourth paying cash in full. In most of these latter cases the purchase money was obtained from the sale of other farms. A few cases represent capital taken from other industries. The conditions under which approximately 60 per cent of these farms were purchased require that, in order that full ownership may be acquired during the life of the present occupant, each of the farms must provide not only a living for the family upon it and interest on indebtedness, but an additional income that will enable the average purchaser during his occupancy to put aside 44 per cent of the purchase price.[106]

The authors further elaborated this view with an analysis of census data to demonstrate the fact of such a movement. They then discussed the conditions which facilitated and the conditions which retarded the acquisition of landownership on the part of farmers.

Spillman read a paper at a joint session of the American Economic Association and the American Farm Management Association in 1917 in which he touched upon the subject of land tenure.[107] In the paper as published by the American Farm Management Association, on page 46 Spillman spoke of "the length of the various stages through which men pass in becoming farm owners." As published by the American Economic Association, the statement on tenure was revised and enlarged and contains, on page 70, the words "climbed the entire agricultural ladder."

Spillman clearly liked the phrase for he used it as the title of his paper before the thirty-first annual meeting of the American Economic Association in December 1918 held at Richmond, Virginia.[108] The subject was introduced as follows:

> The first rung of the agricultural ladder is represented by the period during which the embryo farmer is learning the rudiments of his trade. In the majority of cases this period is spent as an unpaid laborer on the home farm.

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[105] Taylor, "Land Tenure," p. 260.

[106] W. J. Spillman and E. A. Goldenweiser, "Farm Tenantry in the United States," U. S. D. A., *Yearbook*, 1916 (Washington, 1917), pp. 321–22.

[107] W. J. Spillman, "Work of the Office of Farm Management Relating to Land Classification and Land Tenure," The American Farm Management Association, *Proceedings*, 1917 (Published by the Association, 1918), pp. 40–46. Also published in American Economic Association, *Proceedings*, 1917, in *The American Economic Review, Supplement*, 8:65–71, (March 1918).

[108] W. J. Spillman, "The Agricultural Ladder," *The American Economic Review, Supplement* 9:170–79, (March 1919).

The hired man stands on the second rung, the tenant on the third, while the farm owner has attained the fourth or final rung of the ladder. This paper deals with the rate at which men climb this ladder, and the means used in making the ascent. We shall find that many men are able to skip some of the stages above enumerated.

Table I shows the stages passed by 2112 present farm owners in the states of Illinois, Iowa, Kansas, Nebraska, and Minnesota[109]. . . .

TABLE I

STAGES PASSED BY 2112 MIDWESTERN FARM OWNERS IN ACQUIRING OWNERSHIP

Groups*	Number	Per Cent
FHTO	435	20
FHO	268	13
FTO	679	32
FO	730	34

* F = unpaid laborer on the home farm.
H = hired man. T = tenant. O = owner.

Table II shows the methods by which the men in these various groups acquired ownership. . . .

TABLE II

PERCENTAGE OF FARMERS ACQUIRING OWNERSHIP BY DIFFERENT METHODS
(For meaning of symbols, see Table I.)

Groups	Home-steading	Marriage	Inher-itance	Purchase from near relatives	From others	Total purchasing
FHTO	1	9	1	12	77	89
FHO*	4	28	7	6	55	61
FTO	1	5	23	30	41	71
FO	3	4	47	30	16	46

* The percentages in this line apply to Ill., Iowa, Kan., and Nebr. only, the Minn. owners being omitted for reasons stated in the text.

Table III shows the length of the various stages and the average age at which the men in each group acquired ownership.

. . . Those who left their fathers' farms to become hired men did so at an average age of 19 years. This applies to both groups 1 and 2. Group 3 were brought up on larger farms, remained at home four years longer, and were thus enabled to skip the hired-man stage. Their fathers set them up as tenants as a reward for their services on the home farm. Group 4 consists for the most part of men brought up on still larger farms. They remained at home till on the average they were 26½ years old. We have already seen (Table II) that most of these men either inherited their farms or bought them on easy terms from their fathers or other near relatives. . . .

Governmental action in aiding young men to acquire farms is an impor-

[109] The data on which this paper is based were collected by H. H. Clark, of the Office of Farm Management, under the joint direction of E. H. Thomson and the writer.

TABLE III

AVERAGE LENGTH OF STAGES
(For meaning of symbols, see Table I.)

Groups	F Yrs.	H Yrs.	T Yrs.	Total* Yrs.	O** Yrs.
1. FHTO	19	7	10	36	13
2. FHO	19	10	.....	29	20
3. FTO	23	.....	9	33	11
4. FO	26½	.....	.....	26½	17

* Age at ownership.
** Years since ownership was acquired.

tant factor. Other nations, notably Denmark, have solved this problem. There is no fundamental reason why this country can not do the same thing. . . .

It would appear to be the part of wisdom for us to work for legislation intended to aid young men who have proven themselves as hired men to become tenants on good farms. Then when they have proven their ability as farm managers aid should be extended to them in buying farms. Such a plan would be in harmony with the normal processes by which farms are acquired. In helping tenants to buy farms it would be legitimate to limit the purchase price, say, to a specified number of years' rent. This would tend to prevent farm land from rising to such prices that men can not hope to pay for their farms during their working life. At least it would result in reducing tenancy to its normal status in those sections of the country in which the price of farm land is reasonable. It would also tend to reduce the price of land in sections where it is too high, for it would reduce the demand for such land.[110]

This factual presentation by W. J. Spillman was followed in the same session by a philosophical discussion by Richard T. Ely[111] of the place of tenancy in the agricultural system. Ely undertook to formulate an ideal which it is desirable to approach. The paper, particularly the first part of it, does not seem like the product of a firsthand detailed field study, but rather the reflections of a social philosopher with much general observation in many lands and much reading in many languages. Ely's views, like those of "Uncle Henry" Wallace, show the influence of observations in the British Isles. Some of Ely's affirmations are:

Tenancy is everywhere to be regarded as a goal for *some* farmers. There is a class of men, and one not altogether inconsiderable in number, who thrive best under the economic direction of another. In other words, there are men who are good farmers, as there are men who do well in other business enterprises, when they are guided by those who have the managerial ability which they themselves lack. . . .

. . . Where there are wide differences in the capacity [efficiency] of various economic classes, tenancy will naturally have a large place, especially if the lower strata are somewhat deficient in economic qualities. The Negroes of our

[110] Spillman, "The Agricultural Ladder," pp. 170–72, 178–79.
[111] R. T. Ely and C. J. Galpin, "Tenancy in an Ideal System of Landownership," *The American Economic Review, Supplement* 9:180–212, (March 1919). This paper is in two parts — Part *A*, by Ely, and Part *B*, by Galpin. The excerpts included here are from Part *A*.

South furnish an illustration. . . . If we should set out to do the very best we could for them, calling into cooperation with us their wisest leaders, I am inclined to think that at present at least one-half of the Negroes would thrive best as tenants under wise direction, and probably more than one-half, taking the country as a whole. If this is the case, then a good land policy for our Southern States should be directed very largely to the development of good tenancy and good landlordship. . . .

For Negroes and any other similar group, we should always keep open a broad way to success and encourage landownership just as fast as individual fitness for landownership is shown. . . .

Tenancy is one means of transmission of landed property from one generation to another, and a very desirable means of transmission in suitable cases. . . .

Undoubtedly there are many cases of farmers who to their own injury retire too early, but even in an ideal system a very considerable percentage of farms would be operated by tenants, who through tenancy represent a stage in the transference of property from generation to generation. Let us suppose that a man begins work as a tenant on his father's farm at 22, inherits the farm at 32, retires at 62, and dies at 72. Then during the period of fifty years of ownership, one-fifth of the time this man was a tenant, three-fifths a farmer tilling his own acres, and one-fifth a landlord, possibly his son-in-law being the tenant. Two-fifths or 40 per cent of the time the farm has been in a state of tenancy.

It naturally follows from the above that as a new country comes to be an old country there will normally be an increase in tenancy. . . . [The conclusion reached with regard to the percentage of the time the farm was occupied by a tenant should not be interpreted as meaning that where the practice there described continues for a series of generations the farm would be occupied by a tenant 40 per cent of the time. When the count is made from the time the son became a tenant until he retired, the tenancy period was 25 per cent of the total.]

Tenancy is also a good thing when it represents a rung in the agricultural ladder and means a step upwards in the winning of a competency. Sometimes and frequently a man begins as an agricultural laborer, saves money enough to become a tenant, then through tenancy acquires enough to purchase a farm, gives back a mortgage and gradually pays for this mortgage. Familiar statistics showing age groups of farmers, show how largely tenancies form a rung on the agricultural ladder. . . .

We shall not have good agriculture unless our policies are framed with respect to the existence of the three classes — laborers, tenants, and landowners — in due proportion. Any plan for the future which overlooks the three classes is to that extent defective. . . .

In an ideal system of landownership we shall have a very considerable percentage of the land area, both urban and rural, in public ownership. . . .

Tenancy will play a very considerable role with respect to the lands which are in public ownership. . . .

In fact, it is suggested as desirable that our various states should acquire land, where they do not now own it, and should establish model systems of tenancy, conducting various experiments to discover the best kinds of tenancy. It is just as legitimate to have model tenant farms as it is to have model experimental farms, devoted to trials of different kinds of seed and different methods of agriculture. . . .

In an ideal system of landownership, tenancy will be regulated. The regulation of tenancy is a world-wide phenomenon and is increasing in civilized

countries. We have here to do with a public interest. If there is such a thing as a *public utility,* we may say that it is *the land.* While we have much good tenancy in this country, and while the evils of tenancy in the United States have been grossly exaggerated, unquestionably we do have a great deal of tenancy which is far from what it should be, resulting in human loss, as well as loss in material well-being.

Short tenancies particularly are undesirable. The tenant must have a real interest in the improvement of the land, as well as a real interest in the community in which he lives. Older countries have been obliged to make provision for payment to the tenant for the unexhausted improvements of the soil which are due to his effort, and also a payment for disturbance of his tenancy. . . .

In an ideal system of landownership there will be an endeavor to create in the landowner a feeling that landownership carries with it a social mission. . . .

In an ideal system of landownership there surely will be a limited place for ownership of land by those who love the land and yet are not able to live on it. . . .

We find in many parts of the world, but especially in England, those who prefer capitalistic farming without ownership of the land under the conditions of ownership which exist. Doubtless there are many parts of the United States where a man will make more money without ownership of the land than he will with ownership of the land, and this is due to conditions not easily remedied. It is doubtful if from the social and political point of view capitalistic farming without ownership of land is to be encouraged. Certainly it is not to be prohibited absolutely, as within narrow limits it may prove even beneficial. Should any general tendency develop toward a great extension of capitalistic farming without landownership, it would be in order to consider measures to check the tendency. Tenancy as a prevailing system for land utilization, either in city or country, is not desirable, even if the land is publicly owned. New Zealand has tried the leasehold system with public ownership of the land, and is gradually abandoning it for the freehold. As a clever French writer has well said, in New Zealand democracy in landownership has triumphed over socialism in landownership. As a universal system, public ownership of leased and rented land is practically impossible, as well as undesirable.[112]

The Older Farmers in Retreat

The students of country life were interested in farm tenancy and made worthy contributions to the subject. Charles J. Galpin was the leader. In 1919 he published a bulletin based upon a field study in one rural community in Wisconsin.[113] That was a study of movements of people in their relation to the land. The major contribution of that study was one that was not anticipated when the study was projected. It relates to the way in which farmers relinquish their hold upon the land in their later years. The word "retreating," rather than "retiring," was emphasized because a common practice, as shown

[112] Ely and Galpin, "Ideal System," 9:180, 182–85, 187–91.

[113] C. J. Galpin and E. F. Hoag, "Farm Tenancy, An Analysis of the Occupancy of 500 Farms," Wisconsin Agr. Exp. Sta. *Research Bulletin* 44 (Madison, 1919). This is an extended form of Part *B* of "Tenancy in an Ideal System of Landownership" (see footnote on p. 824). A popular discussion of this subject, which gives a good picture of the retreat of the farmer in the interest of his sons, is entitled "New Light on the Retired Farmer," by C. J. Galpin, in the *Country Gentleman* 84:15–16, (May 17, 1919). In that article Galpin expresses his philosophy more freely than he does in *Bulletin* 44 above.

by the study, was for farmers to make arrangements with a son or someone else to work the farm as a tenant more or less under the supervision of the retreating owner. Under these conditions, especially where the tenant was a son or son-in-law, the owner also performed considerable work on the farm especially at harvest time or other times when extra workers were needed. This gradual retreat of the older farmer, corresponding to the time when the young man was gradually taking on more and more responsibility, is a part of the picture of the tenure relationship that had not received adequate attention by the agricultural economists. In 1909, 80 per cent of the farms studied by Galpin were occupied by owners and 20 per cent by tenants. In 1918 the percentages were 71 and 29.[114] A few excerpts will give the gist of the findings:

> The number of farm-owners on the 500 farms who started their retreat (retirement) from farming during the ten-year period was 124. Old age came to some farmers unannounced and suddenly, and retirement was forced at once. In other cases the sag in strength was gradual and retreat took place inch by inch. The fighting spirit seems to cling to the land and to work as long as possible.
>
> This constant social phenomenon of retreating old age seems to have a fixed relationship to the advance of youth upon the land and to the "climbing of the agricultural ladder." . . .
>
> . . . in any considerable community there will be found, in any one year, farmers just starting their retreat from farming, farmers well along in their retreat, and farmers whose retreat may be said to be completed. . . .
>
> In 1909, only 8 farm-owners began their retreat. They started the retreat by letting their farms to tenants. In 1910, (including those farmers that began to retreat in 1909 whose farms are still held by tenants in 1910) 18 farm-owners are in full retreat by letting their farms to tenants, while 3 farm-owners began their retreat by selling their original farms. In other words, each year has a record of the number of farms rented or sold, as the first step in retreat. . . .
>
> A distinct step in the retreat of some farmers is the purchase of a second farm, either much smaller than the original farm or else lying close to town, often even within the limits of town; most frequently the second or third farm combines both factors, smallness and nearness to town.
>
> In cases where the second farm is in the open country and of good size, it is usually found that the retreating farmer has leased or sold the original farm to an older son while having in mind to provide a farm for a younger son, who later either leases or buys the second farm. A third farm for a third son is not unknown. . . .
>
> That the town has truthfully been considered the goal of the retreating farmer, this study will more or less justify. The special light, however, thrown upon the "retired farmer" shows him as moving off his farm by degrees; giving over a part of his house to the newcomer; moving into a smaller house on the original farm; going to live with a son on another farm; moving on to a smaller farm near town; settling in a house in town surrounded by a large garden.
>
> The tenant system appears to be a cog fitting into the notched edges of the veteran farmer's retreat.

[114] Galpin and Hoag, "Farm Tenancy," p. 6.

. . . the retiring farmer gives up the habit of work only upon compulsion of circumstances. . . .

It cannot fail to interest the person who thinks upon the tenant problem in terms of human relationships to find that the veteran farmer, though sagging in his physical strength, is able to impart, in the opportune role of overseer or helper, a portion of the wisdom gained by his years of farm experience to young men in the natural role of tenants.[115]

The detailed facts, presented in a series of tables indicating the relations of retreating farmers, will reward careful study.

G. S. Wehrwein on Farm Tenures

George S. Wehrwein did excellent work in the field of land economics. In 1925 he published an article on landownership and tenancy, in which he described tenancy as one of the "stepping-stones" to ownership. In that article Wehrwein emphasized the significance of the qualities of men as a factor in determining the amount of tenancy in a given area:

. . . the greatest factor in the tenure situation is the human element. The South has not only cotton, tobacco, and rice but also the Negro and a special type of white tenants. This combination explains why in some of the southern states over two-thirds of the farmers are tenants. . . .

The real "tenant problem" lies not with the men who successfully climb the ladder. Tenancy to them is merely a step to ownership and a very efficient part of the journey. The problem lies with the permanent tenant class — those who fail to reach the goal, who never try, or who, having tried to become owners, revert to tenancy, discouraged and ambitionless. These are the men who touch the hearts of those who consider the human relations involved in tenant agriculture.[116] However, cause and effect must not be confused. These people are not illiterate, inert, thriftless, or shiftless because they are tenants, but they remain tenants because they lack those qualities which enable men to succeed. A change in land tenure will not remove the difficulty. Were the "croppers" of the South given a farm gratis the chances are that the majority would be "croppers" again in a few years. They simply are not ready for the management of landed property. This condition is not peculiar to agriculture; there are persons who correspond to "croppers" in all walks of life, who lack the qualities necessary for successful management of property.

However, there is another phase of the matter that must not be overlooked. The weak and illiterate tenant, especially one of the colored races, is no match for his landlord or his credit merchant. There is *opportunity* for exploitation which the landlord, banker and merchant can take or leave as they choose. If they take it they are helping to keep their tenants in the permanent tenant class, and there is ample evidence that such conditions exist. Where generation after generation has failed to rise to ownership, the desire to own land and to settle down to become a resident of a community is not created in the minds of the children. The covered wagon with its load of children and chattels followed by a few farm animals becomes the real home of these people.

The remedy lies in forces far more fundamental than a simple change in

[115] Galpin and Hoag, "Farm Tenancy," pp. 11–15.

[116] See, for instance, the story by Ruth Sukow, "Renters," in the *Century Magazine* 106:599–613, (August 1923); or the poem, "The Cropper Speaks," by E. E. Miller, published in the *Nation* 114:219, (February 22, 1922), reprinted in the *Literary Digest* 72:36, (March 4, 1922).

tenure. A blanket abolition of tenancy will avail nothing. It would not make farm-owners of tenants; it would simply force them back into the farm labor class, and very many would stay there permanently just as they now stay in the "cropper" or tenant stage. A very helpful step toward ownership would thereby be denied them.

Renting implies two parties to the contract – the tenant who wishes to use a piece of land for a limited period, and an owner who is willing to let his property for this time. . . .

The function of the landlord in a system of farm tenure has received very little attention. . . .

A popular conception of a landlord is a man who merely draws rent for which he makes no compensation to society or gives any help to his tenant. Such a theory leaves out of consideration all costs in connection with land ownership, costs which often overshadow the income. Except in cases of the purest type of commercial cash rent, the landlord performs a great many functions other than mere ownership. He always has to bear a part of the risk of agriculture even in cash and standing rents. If the tenant has no adequate harvest, it is often difficult to collect anything at all. In share-renting he definitely assumes part of the risk, and therefore supervises and superintends to some degree the farming operations. In many cases he not only furnishes land and the usual improvements but also the work-stock and other equipment. Speaking in economic terms, he is entitled to a return on this capital in addition to the land rent. As manager and supervisor he furnishes direction and labor, and in the case of the "cropper" he is called upon to furnish credit or to "stand for" his tenant with some merchant. For these various services he is usually rewarded by higher rents, rents which correspond to the increase in services and risks which the landlord assumes. The perplexities and difficulties of dealing with the large group of illiterate and irresponsible tenants must not be forgotten. . . .

What shall be the American land policy with regard to tenancy? It is admitted that there might be too much tenancy, that we ought not to go beyond a "normal" percentage of tenant farming. Probably this percentage would be that amount of tenancy needed to provide the proper step toward ownership for the tenant and to bridge the gap for the retreating farmer between active work on his farm and complete retirement. . . .

. . . It may be that for some farmers tenancy is the goal; that is, they prosper when renting land under the guidance and supervision of a landlord.[117]

Gustav W. Kuhlman made a study of tenancy in central Illinois and summed up his views on the significance of tenancy in these words:

. . . tenancy, much as it has been feared by some leaders, appears to be able to perform several functions in modern farm economy: (1) It makes possible the "retreat" from the farm; (2) it is a "rung" on the "agricultural ladder" to ownership; (3) it may serve as a virtual partnership, the owner supplying the capital while the tenant furnishes the labor; (4) it makes it possible for men with capital to serve a stewardship over the land.[118]

[117] G. S. Wehrwein, "Place of Tenancy in a System of Farm Land Tenure," *Journal of Land and Public Utility Economics* 1:72, 78–82, (January 1925).

[118] G. W. Kuhlman, "A Study of Tenancy in Central Illinois," *Journal of Land and Public Utility Economics* 3:297, (August 1927).

27.

Irrigation Economics

THIN LINES OF DEVELOPMENT in the economics of water utilization had appeared prior to 1919. Elwood Mead was in charge of the irrigation investigations of the U. S. Department of Agriculture from 1899 to 1907.[1] R. P. Teele, a trained economist in the Office of Irrigation and Drainage of the Department of Agriculture, gave much attention to the economic problems of irrigation. The economics of water utilization (the duty of water) and the new economic and legal institutions essential to group action in the utilization of water from a common source and carried through the same canals to many users, were questions that Teele studied. His work included also the preparation of the census reports on irrigation in the United States for 1910 and 1920.

Economics of Irrigation, by R. T. Ely, 1904

Realizing the complicated character of the economic problems of agricultural irrigation, Teele sought help. Richard T. Ely, of the University of Wisconsin, was employed temporarily to make a special study of the economics of irrigation. Ely's report, dated September 19, 1904,[2] was entitled "Economics of Irrigation." Of this study Ely wrote:

> This is the first attempt, so far as I know, made by a professional economist to study irrigation. . . .
>
> It was understood that I was to bring to bear upon this investigation such economic knowledge as I might have. It was hoped that economics had a contribution to offer toward the solution of the problems of irrigation in the United States. . . .
>
> What is needed by the legislatures and courts of our country is the establishment of satisfactory principles upon which they may proceed to lay a basis for the development of a harmonious system of irrigation. . . .[3]

[1] Personnel records of the U. S. Department of Agriculture.

[2] R. T. Ely, "Economics of Irrigation." For reasons not given, the report was not printed although it reached the stage of page proof before the Secretary of Agriculture ordered that it not be published. The page proofs are numbered 121–46. One copy of the proofs, dated September 19, 1904, was salvaged by H. C. Taylor, who, in 1944, placed it in the Ely manuscript collection in the library of the Wisconsin Historical Society, Madison, Wisconsin.

[3] Ely, "Economics of Irrigation," pp. 121–22.

Since this piece of Ely's pioneering work in land economics is not generally available, we are including rather extensive excerpts which give Ely's approach to a new and difficult economic problem. Ely took with him to this field-study in the economics of irrigation a framework of ideas which had been in the process of formulation since the days (1877–79) when he studied in Germany under J. Conrad at Halle and Karl Knies at Heidelberg, both of whom were interested in land economics from the public point of view. Ely's approach in making that study is clearly exhibited in the following:

A few days after I reached Cheyenne, Wyo., I made a preliminary statement concerning that part of the interstate work on the Platte River which I conceived to fall within my province. . . . It is as follows:

The investigation which I have to conduct concerns property rights. As I understand it, I have to trace the origin and growth of property in water. It is necessary to describe the different doctrines of property which are the result of the common law, of statutes, and judicial decisions. The conflicting and incompatible nature of these doctrines must be fully described. If there is a tendency to monopoly in property in water, this must be shown and the results examined. If one kind of property has a stronger tendency to the formation of monopoly than another, it is important to point this out. The influence of various property forms upon general prosperity requires discussion.

The present situation, as a result of these conflicting doctrines, coupled with the limitation of water supply, must be described.

1. Results within the separate States.
   a. Results as to individuals.
   b. Results as to sections and groups.
2. Interstate situation.
   The problem.
3. As seen in the concrete in the Platte River country.
4. The general problem, which is substantially the same in every part of the country, so far as property rights are concerned.

The questions concerned in this part of the investigation are questions of law and economics, or, in other words, of legal philosophy. Economics deals with the relations among men, arising out of their efforts to gain a livelihood. It is concerned with valuable things, as is law, and deals with underlying principles. This entire investigation, then, is an investigation of legal philosophy.

A doctrine is needed which will do substantial justice and bring the greatest good to the greatest number. Also, it must be one which will put an end to litigation, for this is the purpose of law.

This doctrine must be formulated with reference to the existing situation, and so far as possible it must be an evolution of existing customs and rights. But too great timidity in departing from the past will not give permanence, for permanence implies a removal of the most glaring evils and causes of discord.

It is possible that in some cases it may be necessary to buy out existing individual rights by exercise of the right of eminent domain so as to prepare the way for a future harmonious development. Engineering mistakes, costly as they may be, are, comparatively speaking, a small matter.

Laws of property in water must be in substantial harmony with property

laws in general. They must be part of a system. Therefore an examination of property and its evolution is required.

It is necessary to examine legal and economic treatises for the light that they may throw upon this problem of property in water. A discussion with men of experience in irrigation is essential. Men who approach this problem practically from different points of view should be consulted, as farmers, lawyers, judges, engineers, and business men.

While American experience is of paramount importance, the experience of other lands should receive attention. Even where political constitutions differ there may be great similarity in economic needs.

It may be well, also, to point out in a general way the economic significance of irrigation. It is an economic problem as truly as the railway problem. It would be interesting to show its significance as compared with the railway problem.[4]

Few men but Ely could have written that statement of the problem. Ely soon realized that he could make but a beginning in the 100 days allotted to him for making the study and writing up the results of his research, for he wrote:

I had scarcely begun my work before I saw that it was going to take a longer time than I had anticipated. . . .

The difficulties of my task I could not see before I began my work. The complexities of irrigation, when viewed from the legal and economic standpoint, can not easily become apparent to one who has not been long enough in the irrigated portions of the country to become acquainted at first hand with technical details and the difficulties encountered by irrigators. To one living in the East the questions involved seem to be summed up in a few phrases, like public versus private ownership of water and public control, but a nearer view shows that we have to examine carefully the most intricate economic and legal relationships, and that all proposals of readjustment to bring improvements must be based on a detailed examination of existing practices. What exists at present can be modified only with a due regard to customs, habits, and even prejudices, as well as to vested rights which can not be impaired without compensation. On the other hand, a person who has occupied himself for twenty years with irrigation can not readily put himself in the position of one who, without all this gradually acquired knowledge, begins an investigation of irrigation. The opinion has been expressed that a properly trained person brought up in the East, who approaches the subject of irrigation with a perfectly open mind, may be the best one to make a report on the economic phases of irrigation. Much can be said in favor of this position, but the man must be sure to take an abundance of time to understand fully the issues involved.

We have not at present a body of economic knowledge which can be applied to irrigation. What is needed is the development of such a body of knowledge. . . .

Such a body of knowledge as we need I think we could appropriately term "the economics of irrigation." This corresponds with the economics of forestry, the economics of railways, etc. We use the expression now, economics of agriculture, and the economics of irrigation would come under that general designation. I offer the following as a definition of the economics of irrigation:

By the economics of irrigation is to be understood the systematic treat-

[4] Ely, "Economics of Irrigation," pp. 123–24.

ment of the underlying principles of irrigation, when it is viewed with respect to the relations which arise among men who are engaged in its practice.

The relation of the law of irrigation to the economics of irrigation is a close one. It is like the relation of the economics of railways to the law of railways. The economics of irrigation deals with general principles and the methods of securing improvements. Economics and law alike deal with things having value, but, while their topics are the same, economics deals with their more fundamental and philosophical aspects. Economics, indeed, may be called the spirit of the laws. . . .

The agriculturist deals with irrigation with respect to its influence upon the production of wealth. He must learn how to apply water in the best way. This means that it must be applied at the proper time and in such amounts as will enable each unit of water to accomplish the largest results. The agriculturist is concerned with the causes of individual production of wealth.

Now, what distinguishes the economics of irrigation is that it deals primarily with social affairs and not with physical conditions. It discusses the economic relations which arise among men who are practicing irrigation in so far as these relations may be traced back to irrigation. The well-known and much-debated topic of priorities furnishes an illustration. We have the widely prevailing legal maxim, "First in time, first in right," whereby each one is graded with reference to others, having a right to take a certain amount of water in a given order with respect to others. . . .

The economics of irrigation takes up irrigation first of all at that point suggested by the term "property." It inquires into the origin of property in water, going back to water as virtually, if not nominally, a free good, to be appropriated and used by the first comer. It examines the steps one by one by which water becomes property. It ascertains that various forms of property are connected with water. Without going into all the legal niceties of property in water, we find a broad division of property in water into (1) public property and (2) private property. We ascertain also a distinction between property in water itself and a private right to the use of public water. This seems like a refinement, but experience shows that it has important consequences, inasmuch as the treatment of water as public property to be appropriated by individuals for their beneficial use strengthens public control, making such control easier under American constitutional government than it is when the water itself is regarded as private property. We also ascertain that, according to some authorities and some States, water is a purely personal property, which may be entirely separated from property in land and sold and transferred freely, like an ox or a horse. One may walk through the streets of a city like Greeley, Colo., and see advertised "horse for hire," "reservoir rights for rent," and come on advertisements of water rights in irrigation ditches either for sale or rent. In other States there is an attempt to keep land and water together, regarding the water as appurtenant to the land and inseparable from it. Wyoming is the typical State of this class, as Colorado is of the first class.

The economics of irrigation discusses the influence of various kinds of property in water upon general prosperity and upon the fortunes of individuals. . . .

. . . We have as a general problem of economics to examine the origin and growth of property in water. . . . Nothing in economic history is of more fundamental importance than the evolution of property in general. . . . Now, in an investigation of property in water we have an opportunity to witness the origin of a most important kind of property, and in our own country men

still living have seen its evolution from its beginnings among us until it has a value of hundreds of millions. The process is still going on. . . .

. . . We have an opportunity in an irrigated country to carry our analysis of the elements of value further than in a humid region, inasmuch as we can separate the value of land from the value of water. . . .

IDEALS IN IRRIGATION

Maximum Results the Most General Ideal

. . . We desire large production, but we also desire that the wealth produced should be distributed in accordance both with justice and American ideals. It is not enough that a great deal of wealth should be produced by irrigated agriculture. American ideals demand that there should be in that part of the country dependent upon irrigation not a large class of tenant farmers, but a large number of independent landowners tilling their own acres. . . .

The most general economic ideal is to produce the maximum of results with the minimum of cost. Cost means the expenditure of energy. Energy in economics is a composite consisting of labor and capital and the use of natural forces, especially land and water. What does this ideal mean when applied to irrigation? It signifies that water should be used upon land of the highest quality first of all, then that land of the second quality should be taken into cultivation and water applied thereto, then that land of the third quality should similarly be taken up, and so on. . . . It is uneconomical and contrary to general public policy to apply water in irrigation to inferior land and leave the better land uncultivated. . . .

. . . There can be no doubt that this statement is entirely correct, if we leave out of consideration individual rights. The statement is, indeed, correct, but it is inadequate. If I have a poor piece of land and you take from me my water to put it upon a superior piece of land, it is no consolation — or, at any rate, a very inadequate one — to me to know that the average results from the expenditure of a unit of economic energy have been thereby increased. . . . I am not satisfied with this arrangement unless, indeed, I receive some compensation for my sacrifice in the general interest.

. . . The individuals whose interests are sacrificed for the sake of general prosperity should be indemnified for their losses. This may require, in some cases, condemnation proceedings. At any rate, there should be some orderly system of procedure whereby individual rights can be conserved, but at the same time individual rights should not stand in the way of general well-being. The courts have decided in many cases that this is sound doctrine. . . .

. . . Have States and Territories as such any interests which should be conserved even if a sacrifice of general prosperity is thereby involved? . . . This is a broad political and sociological as well as economic problem, which requires careful treatment and an answer before interstate problems of irrigation can find solution. . . .

Security of Landed Property as an Ideal

Another ideal is security of landed property. Private property is indeed the corner stone of the social and industrial order. . . .

. . . the purposes which land serves are greatly impaired by an insecurity in land values. This insecurity is always present when there is uncertainty about water rights. This uncertainty is notoriously the case in the irrigated sections of our country and detracts greatly from the value of irrigated agriculture. . . .

Is there a real peril that in the arid country there may arise a dangerous monopoly in the ownership of water used for irrigated agriculture? The limitation of the water supply at once suggests this danger. . . .

. . . A free people can not consent to be in a position where they will be forced to rely upon the possible philanthropy of an individual or a combination of individuals. Economics teaches clearly that where the control of free competition is removed, public control in some form must take its place. . . . The existing dangers give ground for public control in accordance with well-recognized principles.

The principle of public control is recognized in Colorado and was first established in Colorado. The water is regarded as public property and is appropriated by individuals for their own use. Appropriation is limited in accordance with the principles of the law to what can be diverted and applied beneficially. . . .

Another feature of the Wyoming system of importance is that the water is regarded as inseparable from the land and not as personal property.[5] Economics has always treated land and water as belonging together, and all the arguments of economists rest upon the assumption that they are inseparable. It can be said, however, and said truly, that political economists have until recently lived only in humid sections and that the fact that the inseparableness of land and water has been simply assumed does not prove that there should not be a separate property in each. There are certain conditions where there appears to be a gain in the separation of land and water, and the wonderful developments in Colorado have taken place, as we have seen, on the basis of separate ownership. On the other hand, it must be acknowledged that the experience of Colorado clearly shows that where water and land are separately owned public control becomes far more difficult. Of course, in Colorado, very generally water is owned by the same men who own the land, and the reports of the irrigation investigations show that this is desirable. Whatever may be the theoretical system, it is desirable that in the main land and water should belong in the same hands in order that we may have a class of farmers not only theoretically but practically owning the land that they cultivate, and owning also that which makes the land ownership effective, namely, the water needed for its cultivation.

In general, there are two methods of public control. One is by complete Government ownership, and the other is through the exercise of control over private owners by means of public bodies. . . . The difficulties which have been encountered in securing this public control of irrigation in the arid West are analogous to those which we have experienced in securing public control over private property in the case of railways in the United States. At the same time any economist who investigates the actual conditions in our West must acknowledge the soundness of the conclusions reached by those who have conducted the irrigation investigations at the Office of Experiment Stations, that private ownership of ditches grew up naturally and inevitably in the West and that certainly for a very long time to come a complete system of public ownership is not feasible. It is most interesting to the economist to note the general efforts to treat the water itself as public property and to treat the ditch owners as those who simply transport this public commodity. If irrigation companies are regarded simply as transporters of water, we have useful and helpful analogies for the establishment of public control in the principles which have already secured recognition in the control of railways. This distinction which is made between the ownership of the water

[5] Since the above was written, the Wyoming Supreme Court has decided that water rights are not inseparably attached to particular tracts of land, and [that they] can be sold. Johnston *v.* Little Horse Creek Irrigation Company, 79 Pac., 22.

and the ownership of the ditches for transporting the water is one which, in my opinion, must receive the indorsement of economists. Where water has already come to be regarded as private property it may be necessary to make a change, with the exercise of the right of eminent domain. It seems obvious that the nearer we can approach to public ownership the better, but at the same time it must be recognized that we must proceed in accordance with our traditions and practice. This practice can be modified greatly only as public sentiment changes and as our administrative system develops. . . .

NEED OF A HARMONIOUS SYSTEM AS A CONDITION OF EFFECTIVE CONTROL OF WATER FOR IRRIGATION PURPOSES

. . . It was natural that the system of priorities should be developed. At first water existed in superabundance. If those who came first had not felt secure in appropriating it for their purposes, no development of irrigated agriculture could well have taken place under the actual historical conditions. . . . It is, however, a mere accident if the development of irrigated agriculture in accordance with the system of priorities produces a harmonious system resulting in such a use of water as to accomplish the largest purposes and to appeal to the sense of justice of all concerned. The first appropriators may be far down the stream and it may involve a large waste of water through seepage and evaporation to let the water down to them. Taking human nature as it is, those farther up the stream, when they see their crops dying for lack of water, will not consent willingly to let the water flow by them to satisfy an earlier appropriator, when, as sometimes has happened, several feet are wasted to satisfy a claim for 1 foot farther down the stream. . . .

In constructing a harmonious system we shall find help if we ask, How would the water be managed if the land and water were all owned by one individual? Naturally it would be managed as a unit. The water would in general be allowed to water first the land nearest the source of the stream and then the lands lower down, and so on, the water being kept together so far as practicable, as thus waste by seepage and evaporation are reduced to a minimum. Moreover, as is shown by seepage measurements . . . in this way the water would accomplish the most, inasmuch as seepage works, of course, from the head of the stream downstream. It is estimated that one-fourth to one-third of the water applied to irrigated land returns in the form of seepage. It must, therefore, be true that by using water first near the source of the stream there is a total gain to the country, as in this way the water can be diverted the greatest number of times. . . .

It is obvious that the construction of a harmonious system of irrigation would interfere to some extent with existing individual rights. This interference can not be permitted unless compensation is made. This is a well-recognized legal principle. . . .

Ultimately it would seem that there must be such an adjustment of priorities as would give us harmoniously developed irrigation districts. . . .

As water becomes more valuable the time may come when it will be desirable to condemn existing rights, in order to secure harmonious and unified arrangements for utilizing a given water supply. . . .

INTERSTATE PROBLEMS

. . . The reports of the present year show the need of harmonious interstate action. . . .

The suggestion that the National Government should restrict its functions to the determination of the amount of water which flows down from one

State into another deserves very careful consideration, as in this way the interference of the Federal Government is reduced to a minimum. . . .

This brings before us the essential importance of the interstate investigations in the seepage and the return flow of water used on land. It is shown that a considerable part of the water used does return to the stream, and there is within limits a tendency so to equalize the flow of the streams. . . . Any satisfactory adjustment of interstate relations must in part be based upon the seepage investigations already conducted. It would seem necessary, however, to continue further these investigations, so that we may have a greater knowledge of all the facts concerning the influence of seepage. It is not as yet by any means clear, for example, what is the influence of irrigation in Colorado upon the people in Kansas who live in the valley of the Arkansas in the latter State.

CONCLUDING REMARKS AND RECOMMENDATIONS

I wish to recommend, then, that the inquiries which are here so imperfectly sketched should be prosecuted by economists acting in harmony with engineers, lawyers, and others already engaged in the investigation of this important subject of irrigation. As I have already intimated, long-continued, detailed, and painstaking work is necessary. The economic history of a good many separate irrigation companies will have to be investigated carefully and written in detail. The economic history of certain regions, as certain parts of northeastern Colorado, or of certain water divisions in that and other States, must be investigated. The results of these separate studies must be synthetically gathered together. Those concerned in irrigation investigations must meet in scientific gatherings and discuss their work as the economists have discussed the investigations which they have conducted on trusts, railways, taxation, etc. In this way principles will gradually be established which will be accepted by legislatures and courts, and we shall have a satisfactory branch of knowledge which we can appropriately term "economics of irrigation."[6]

While Ely's paper on irrigation economics was not published, it was doubtless influential in shaping the thinking of R. P. Teele who, for a quarter of a century, was the leader in this field. In the spring of 1905 Teele went to Madison, Wisconsin, to see H. C. Taylor. They discussed a number of questions in agricultural economics. Soon after that Taylor was asked to take a position with Teele to work on the economics of irrigation. Taylor went to Washington on July 1, 1905, with a leave of absence from the University of Wisconsin for one semester. At the end of his leave he decided the greater opportunity for his work was at Wisconsin.

Farm Management and Water Utilization, by H. C. Taylor, 1905

But Taylor found time while in Washington to write a paper on an economic aspect of irrigation which was completed and published after his return to Wisconsin. That paper, entitled "Economic Problems in Agriculture by Irrigation,"[7] was in three parts: "I. The Importance of Agriculture by Irrigation," "II. Economic Use of

[6] Ely, "Economics of Irrigation," pp. 124–46.

[7] H. C. Taylor, "Economic Problems in Agriculture by Irrigation," *Journal of Political Economy* 15:209–28, (April 1907).

Water in Irrigation," "III. The Influence of Laws and Institutions on the Economical Use of Water."

In Part I it is pointed out that agriculture by irrigation is important not only because of the value of the special crops, such as citrus fruits, apples, hops, and sugar beets, but also for hay and grain. The importance of the hay crop arises from the stability and insurance it provides for the grazing industry:

> The range live-stock industry has been greatly influenced. In the early days the live stock had to depend upon the range in winter as well as in summer and great losses were common because of the lack of a winter feed-supply. At the present time the range is supplemented by the production of alfalfa hay for winter feed, and the range industry has been insured against heavy losses.[8]

It is pointed out, also, that agriculture by irrigation had provided the basis for greater expansion of the mining industry and the development of railroad transportation by providing cheaper food for the miners and more freight for the railroads.

The quality of the farmer, a favorite theme with Taylor, was not overlooked:

> Agriculture by irrigation is developing a new type of farmer. There are several reasons for this: (1) relatively large investments are necessary to this form of agriculture; (2) the profits due to superior efficiency as a manager are very large, while the losses due to careless management are sufficient to eliminate the negligent farmer; and (3) the opportunities for planning the work of the farm, as if it were a factory, are much better than in the humid regions, because the water-supply can be so regulated that the field operations move on regularly from seed-time to harvest. Where the farmer is secure in his right to an adequate supply of water, the chance element is less also with regard to quantity of crops produced. While the operator of the irrigated farm is surrounded by forces and conditions which seem not only to make possible, but even to compel, development of the business side of agriculture, he is at the same time confronted with difficult problems of his own.[9]

The remainder of the article contains a discussion which is partly drawn from Taylor's economics of farm management and partly from Ely's philosophy of the general welfare. This is illustrated in the following:

> Agriculture by irrigation, as well as agriculture under less artificial conditions gives rise to two classes of economic problems. In the first class are those problems which confront the farmer in his efforts to select land, choose crops, and regulate the proportions between land, water, labor, and equipment in such manner as will enable him to secure the largest total net profits. In the second class are those problems which confront the statesman whose duty it is to formulate laws, and institutions which will set such limitations on free actions of individuals as may be required to bring their actions into harmony with the interests of society as a whole.
>
> There is manifestly a close relation between these two classes of problems.

[8] Taylor, "Problems," p. 211.
[9] Taylor, "Problems," p. 212.

It is necessary that the statesman shall understand the motives and actions of individuals when left to do as they please. It is also necessary that he shall have a clear comprehension of the actions required of the individual to secure the highest degree of social well-being.

It is perhaps true that the primary function of public authority is, through its laws and institutions, to bring the actions of individuals into harmony with the interests of society as a whole, but another function of the state is the education of the farmers to know and to do that which is, at the same time, in their own interest and in the interest of society as a whole. . . .

The economic problems involved in the use of water whether viewed from the standpoint of the individual farmer or from the standpoint of the nation as a whole, may be included under four heads: (1) On which land should the water be used? (2) To which crops should the water be applied? (3) How should the water be applied? (4) How much water should be used per acre in the production of a given crop?[10]

These four problems are discussed in the setting of agriculture by irrigation. The principles laid down are those which have been presented in other chapters of this book. The greater emphasis upon the proper degree of intensity of utilization of water was due to Taylor's general interest at that time in the problem of intensity of culture, a problem on which he was striving to find the correct answer. He recognized that after the economic principle to be followed had been found:

. . . the problem remains of developing a system of accounting which will enable the farmer to attain this ideal, and this duty develops upon the state.[11]

In formulating laws and institutions to regulate the use of water, is is important that, so far as possible, the regulation should make it to the interest of the farmer to strive after the highest social economic ideal, or, in other words, harmonize individual and social interests. Under present irrigation institutions there are two methods of granting the use of water. One is to grant a definite quantity of water which may be used where the grantee may choose and on any quantity of land he may choose; the other method is to grant sufficient water to irrigate a specific tract of land of a given area, with a maximum limit as to the quantity of water which may be taken. . . .

. . . It is very generally believed that the farmers will use the water more economically if it is secured in fixed quantities, without reference to the extent of the area to be irrigated, than where the area is the fixed unit. For example, if the farmer has a fixed quantity of water which he is free to use as he pleases, he will cease to add another increment of water to a given area when this water will yield him a greater net profit when applied to other land which would otherwise be left unirrigated. On the other hand, if the farmer has a right to sufficient water for a given area, he will desire to add succeeding increments of water to that given area so long as each addition will result in an increase in his total net profits, when nothing is counted as the cost of the final increment of water. . . .

The injustice of excessive rights which enabled the earlier appropriators to expand their diversions, enrich themselves, and impoverish their neighbors,

[10] Taylor, "Problems," pp. 212–14.

[11] The problem of ascertaining the most profitable degree of intensity of culture, as well as that of crop selection, is one which demands attention in all lines of agricultural production in this day of increasing land values. The United States Department of Agriculture and some of the state experiment stations are commencing to work on these problems. It is expected that the results will be highly interesting to economists as throwing light upon some unsettled questions in economic theory, and that they will be beneficial to the agricultural interest.

was uppermost in the mind of the author of the Wyoming system, and his aim was to avoid this injustice. . . .

It would seem to be true that the interest of the state which grants the water would lead to a restriction in the quantity of water which would be turned into the ditches of the farmers, and in this manner force the farmers to use the water in that manner which conforms to the social ideal of economical use. In order to accomplish this result, it would be necessary however, for the state to ascertain, by a careful system of experimentation and accounting, the most economical use of water in every locality and for every crop produced in each locality, and then to limit the water-supply accordingly. In favor of this means of securing economy in the use of water it is argued that the state will have to carry on the experiments in any case; for these experiments are too difficult and too expensive to be carried out by the individual farmers. It may well be questioned, however, if it would not be much cheaper, lead to less friction, and be more stimulating to the intelligence of the farmers, to develop a system of accounting and teach the farmers to ascertain for themselves when they are securing the best results, and then so to frame the laws regulating the use of water that, when the farmer follows his own interest within the limits of the law, the best interests of society will be conserved. When the rights have been established, and a complete and rigid system of distribution has been developed, the dangers from excessive appropriation tend to pass away, and it would seem the simplest solution of the problem to continue granting each farmer, or his grantee, the quantity of water he has been receiving for many years, leaving him to use it on more or less land as seems most economical.[12]

Growth of Irrigation Institutions, by R. P. Teele

In 1909, after R. P. Teele had been in the service for ten years and had edited and summarized the reports on irrigation and drainage published by the U. S. Department of Agriculture, he wrote a review of the irrigation investigations for the years 1899 to 1908, inclusive.[13] Since Elwood Mead had been State Engineer of Wyoming, it is not surprising to read in Teele's report: "At the time this work began the ideas advocated in our bulletins were largely embodied in the constitution and laws of Wyoming and in the laws of Nebraska."[14] The Congressional action providing for the support of these investigations provided for the investigation of (1) "the laws and institutions relating to irrigation" and (2) "the use of irrigation waters, with especial suggestions for better methods for the utilization of irrigation waters in agriculture than those in common use."[15] Reviewing the work of ten years, Teele said:

. . . our early investigations of the laws and institutions relating to irrigation showed the following weaknesses in the operation of existing laws:

1. Most of the existing rights to water were undefined.
2. Many decrees defining rights were manifestly unjust.
3. There was not adequate provision for protection of rights.

[12] Taylor, "Problems," pp. 225–28.
[13] R. P. Teele, "Review of Ten Years of Irrigation Investigations," U.S.D.A., Office of Experiment Stations, *Annual Report*, 1908 (Washington, 1909), pp. 355–405.
[14] Teele, "Investigations," p. 359.
[15] Teele, "Investigations," pp. 356–57.

4. There was not sufficient supervision of the acquirement of rights to insure a definite knowledge of what rights were secured.

All of these weaknesses can be traced to a single source — the conception that water-right adjudications are private controversies in which the States had no more interest than in suits over any other class of property. . . .

In adjudications the public was not represented, the decrees being based on interested testimony and often on stipulations agreed upon by the parties, so that they were in effect a division of a public resource among themselves by a few parties who, under the accepted doctrine of water rights, were entitled only to rights to so much water as they had put to a beneficial use. In almost no case were the decrees based on any exact knowledge of the capacities of ditches, the quantities actually diverted, or the needs of the lands served.

In only a few States was there provision for the appointment of officials to enforce water-right decrees, and in some States the only recourse when decreed rights were violated was a contempt proceeding. . . .

To remedy these evils the earlier bulletins of this Office recommended the adjudication of all existing rights by administrative boards, their decisions being based on surveys and measurements made by public officials and the testimony of the parties interested; the division of streams among those entitled to water by public officials and the acquirement of rights under such public supervision as will define them as they are acquired. In other words, they recommended that the acquirement and protection of water rights be considered a public matter rather than a private matter. . . .

The Wyoming constitution and laws provide for the appointment of a State engineer and four superintendents of water divisions, who together shall form the State board of control, and for the appointment of water commissioners to distribute water to those entitled to its use. The board of control is charged with the adjudication of existing rights, the water commissioners, under the direction of the superintendents of divisions and the State engineer, distribute water, while the State engineer supervises the acquirement of new rights until they reach the stage where proof of diversion and use must be made, when the board of control passes upon them.

Before the adjudication of rights to water from any stream is undertaken the State engineer makes surveys of the stream, the ditches diverting water from it, and the adjoining lands. The superintendent of the division in which the stream is located then collects sworn statements of all claims to rights, takes testimony as to dates of first use of water, hears contests, and prepares a list of rights. This list is submitted to the board of control, which prepares a formal decree defining all rights, and issues certificates of rights to the claimants. These certificates are mailed to the clerk of the county in which the irrigated lands are located, where they are recorded and then mailed to the claimants. Appeal may be taken from the decisions of the board of control to the courts. This provides for a complete list of rights existing at the time of adjudication.

Parties wishing to divert water from streams must apply to the State engineer for a permit to make the diversion, and may not begin construction until permit is secured. . . .

One important departure from the system originally advocated by this Office has been made in Wyoming, as well as all the States adopting codes within the last decade. This relates to transfers of water rights from one piece of land to another. The dangers of the monopolizing of rights to water by nonusers, with the possibilities of the exploitation of the water users by the owners of the water rights, led to the enactment of laws making water rights

appurtenant to the lands in connection with which they were acquired and prohibiting their transfer apart from the land. It seemed self-evident that under such laws the holding of a water right apart from land was impossible, and consequently the existence of "water lords" was prevented. But the economic disadvantages of attaching rights to lands which might prove to be worthless or inferior to other lands on which the water might be used have led to the repeal or modification of such laws in such a way as to allow of transfers under much the same public supervision as is given to the acquirement of new rights. . . .

Aside from the effect of laws upon investments and upon settlement, it has been found that the character of the laws has a marked influence upon the economical use of water. The water laws of the arid States are of two general classes, considered from this point of view, those which allow of the acquirement of rights to definite quantities of water and those which limit rights to the necessities of a definite tract of land. Under laws of the former class canal owners are free to use their water supply on as large or as small an area as seems to them best, and since the more economically the water is used the larger area it will serve and the larger returns it will bring, every consideration leads to an economical use of water. Canal owners receive the direct benefit of their economy. Under laws of the latter class, limiting rights to the needs of a particular tract of land, with a maximum limit fixed, as in Wyoming and Nebraska, there can be no incentive to economy, since any water made available by economical use goes to others than the one making the saving. The inevitable tendency is for farmers to use as much as possible within the maximum fixed, in order that they may not by present economy decrease their supply for future needs. The laws of all the arid States prohibit waste and authorize the water officials to stop waste, but between positive waste and the most economical use there is a wide margin. This system has the added disadvantage of making rights indefinite. When prior rights are fixed at a definite quantity of water, subsequent appropriators know what may be taken by the prior appropriators and can estimate fairly well their own chances for water, but under the other systems a change in the type of agriculture by prior appropriators may so enlarge their use as to destroy entirely the value of later rights.

. . . A few companies deliver water on a quantity rate, with a fixed minimum charge, and it has been found that farmers securing water under such contracts use much less water than those paying a flat acreage rate — in two instances, where accurate measurements were made, the saving was more than 25 per cent.[16]

Thus, by the end of ten years, the investigations had materially modified the ideas which Elwood Mead had brought with him from Wyoming in 1899. These modifications were in the direction of the Colorado practices of providing for transfer of water from one piece of land to another and that of granting a fixed amount of water and allowing the farmer to use it on more or less land in the interest of a more economical use of water.

After nearly two more decades of service with the government, devoted to the study of the problems of agriculture under irrigation, Teele summed up the results of his research and thinking in a volume on *The Economics of Land Reclamation in the United States*.[17] The

[16] Teele, "Investigations," pp. 358–59, 361–62.

[17] R. P. Teele, *The Economics of Land Reclamation in the United States* (Chicago: A. W. Shaw Company, 1927).

1927 statement shows a growth of the subject in breadth as well as in clearness of conception of the vital issues. As to the scope, Teele said: "The economic problems include the need for the products of the land to be reclaimed; the relative advantages of expansion on reclaimed land or other land; the desirable extent of public direction, regulation, or control; the desirable or necessary types of organization; the relation of cost and benefits; methods of financing and of recovering cost."[18] It became clearer to Teele as his studies continued that the economical use of water in irrigation was a matter which could be enhanced or retarded by irrigation laws and institutions:

> The use of water in irrigating land has many economic aspects entirely aside from those of cost already mentioned. Given a certain volume of water, will it bring a larger return if used on a small area or on a larger area? Common experience and carefully conducted experiments show that the law of diminishing returns works more conspicuously in the use of water for irrigation than in almost any other field. Not only does the rate of increase in production due to the use of added increments of water on the same land fall far below the rate of increase in the quantity of water used, but the point of actual decrease in production is soon reached. There is no question, therefore, when considering the subject strictly from the standpoint of the quantity of product that can be grown with a given quantity of water, that the larger return is obtained by using the water on a larger area of land. But considered in its application to a particular situation the problem is not so simple. It involves the extent and cost of available land, the extent and cost of available water, the systems of charging for water, the alternative uses for both land and water, and many other factors. It also has a very important bearing on the subject discussed in the next paragraph — water rights.

WATER RIGHTS

In most sections where irrigation is practiced, there is much more land physically suited to cultivation than the water supply will serve satisfactorily. Land with a water supply has a high value; land without a water supply has little or no value. This gives great importance to water rights, and the nature of such rights has much to do with their value, as well as with the economy with which water is used. We say water rights rather than water supply, because the farmer does not own a given body of water but rather a right to receive a share of a supply that recurs from year to year. The nature of rights to water from streams is governed by state laws, and the nature of rights to water from canals is governed by articles of incorporation, by contracts and regulations, as well as by laws.

The laws of Colorado and Wyoming illustrate the two most important variations in statutes relating to the nature of rights to water from streams.

Under the laws of Colorado, canal owners obtain rights to fixed quantities of water which they may use on much or little land as they choose, except that they are not permitted to waste it. Since land is plentiful and, without water, is cheap, there is every incentive to use water economically. Self-interest leads to efforts to get the highest possible returns from the use of the given quantity of water. Under these laws, canals built many years ago have been extended from time to time as continued use decreased the water requirements of old land and as water users learned to use it more economically.

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[18] Teele, *Land Reclamation*, p. 5.

Under the Wyoming law, canal owners acquire rights to sufficient water for certain specified tracts of land, with a maximum quantity per acre fixed by law. The rights are attached to the particular tracts of land described in the permits received from the state, so that the owner has no right except as he needs to use the water on those tracts. He has nothing that he can transfer to other lands or use elsewhere. Under this law, the interest of the farmer lies in increasing the quantity of water used so long as added water will bring an added return, notwithstanding the fact that a like quantity of water used on more land would bring many times the return.

Since the extent of the area that can be irrigated depends on the water supply, these characteristics of the state laws have a very important bearing on the ultimate expansion of the irrigated area. Some of the other states have adopted the Colorado theory, and some the Wyoming theory. The former depends upon self-interest to secure economical use; the latter depends on state supervision. . . .

The bases on which charges for water are made have an important influence on the use of water. It is evident that a flat charge per acre, regardless of the quantity used, gives no incentive to economy, and that, on the other hand, a charge based on the quantity of water delivered presents a very effective argument for economy. On the Federal irrigation projects, and on many other projects, there is a mixed rate — a flat charge per acre, the payment of which entitles the farmer to a fixed quantity of water; and in addition a quantity rate under which the farmer can get additional water if he thinks the return from its use will justify the expenditure. . . .[19]

In the opinion of the writer, the largest use of the water supply, which is the limiting factor in western agricultural development, will result from a system of water rights that enlists self-interest in the cause of economy, rather than a system of public control and prevention of waste.

In Egypt and India there is nothing similar to our system of water rights, and there exists an entirely different type of farming. The large irrigation works are built by the governments, and there is no attempt to recover the cost of construction or operation through direct payments for rights, as there is in the United States. The return comes through taxation of the products grown by use of the water supplied, and water is distributed where it promises to produce the largest tax returns. The individual farmer has no *right* under which he can demand water, but is dependent upon the will of the canal management. His success in obtaining water under such a system depends very largely upon the character of the canal officials — whether they have humane instincts and have at heart the interests of the individual farmer, or are interested chiefly in tax returns, and distribute the water accordingly.

Conceivably, such a system may bring about a larger production per unit of water supply than does our system of rights, but this is by no means assured, as government agents are not always wise nor always honest. Such a system is more apt to result in favoritism and graft than in economical use of water. But even if it be assumed that it would bring about a more economical use of water, our whole political and economic structure is based on individual rights; that is the heritage of the English-speaking peoples, and we must not sacrifice it for a possible, and not by any means assured, "mess of pottage" in the form of increased crop production. Our experience to date has shown that a system of rights that allows full play to self-interest brings about the largest development and the most economical use of water, as in

[19] Teele, *Land Reclamation*, pp. 16–19.

Colorado and California; while every limitation placed on this right, as in Wyoming and Nevada, limits development and tends to wasteful use.

From the standpoint of the individual, the best use of water depends on many conditions. If water is cheap and the use of greater quantities adds little to cost, it may pay the farmer to increase the quantity used so long as there is any appreciable increase in crop, with no injury to his land. If water is dear and land is plentiful and cheap, it may pay better to spread his supply over a large area.

Costs of seed, cultivation, and other factors in production, however, may be such that the cost of using the larger acreage of land may more than offset the saving in cost of water per acre due to spreading a given supply over a large acreage.

The economical limit will vary from place to place and from time to time, with the extent and cost of the water supply, the extent and cost of available land, and the cost of farm operations. . . .

Under the old commercial enterprises, the companies sold rights to water for specified tracts of land, with fixed quantities of water to be delivered, but with the provision that the purchaser had a right to only so much water as was needed for the land described. Under such contracts, the tendency was for farmers to use all they could get, and also to waste water, to maintain the show of need.

The ownership of stock in joint stock companies — the most common form of organization — usually entitles the holder to a fixed share of whatever water is available, which he may use on any land to which the water can be delivered. Here the tendency is to economical use.

The laws and regulations controlling the government projects provide for minimum fixed charges per acre for which a fixed quantity of water will be delivered, and for quantity rates above the fixed charges and quantities. This is theoretically the best system of rates, since the fixed charges provide for overhead costs, while the quantity rates furnish the necessary incentive to economical use. Use will be increased only so far as the expected increase in return is greater than the cost of the increased quantity of water used.[20]

There is no doubt as to who was responsible for the ideas of the early days. It was Elwood Mead, the State Engineer of Wyoming, who had become Chief of the irrigation investigations in the U. S. Department of Agriculture. There is likewise no doubt that Teele was stating his own views as an economist who had studied the problems for more than a quarter of a century. Teele emphasized the importance of enlightening the self-interest of the farmer, but he did not ignore the public interest. He said, "Water rights should be considered from two standpoints; the welfare of the individual water user, and the welfare of the public." [21] With regard to the economy of reclaiming land for agricultural purposes, Teele said:

. . . Reclaimed land and that susceptible of reclamation has no monopoly crop and has no special adaptability to any crop. It must compete with all other unused land in the production of the crops common to most of our country, usually with the handicap of a long haul to market. So long as the reclaimed lands produce for a local market, they have the freight differential in their favor, and their distance from other markets and from other pro-

[20] Teele, *Land Reclamation*, pp. 16–19, 286–87, 299, 300.
[21] Teele, *Land Reclamation*, p. 288.

ducing centers is a protection. But as soon as any region produces in excess of the home demand, the transportation differential is the other way, and, considered from this standpoint, the nonreclamation land has the better chance for development.

Under the conditions described, two courses are open: The government, local and national, may stay out of the field and let private enterprise undertake reclamation when and where it appears that favorable local conditions will justify it; or governmental agencies may subsidize reclamation in some way sufficiently to enable the reclaimed lands to compete with the nonreclamation lands.

Thus far, the development of the reclaimed lands of the west has been subsidized, either involuntarily by investors who have lost heavily, or intentionally by the Federal government under the Reclamation Act. It has been stated by a great many persons that there never has been a financially successful irrigation enterprise in the United States. This may not be literally true, but it is true, without doubt, that generally such enterprises have been financial failures. To the extent that investors in such enterprises have lost money, they have subsidized this development. . . .

The first question as to future policy on land reclamation is whether our agricultural expansion shall be permitted to take the line of least resistance, and go where the opportunities for profit seem to be greatest — in which case reclamation will take place slowly, as peculiarly favorable local conditions arise and as expansion in other directions becomes more difficult or expensive — or shall it be forced on reclaimed land by continued subsidies? . . .

. . . the great body of our reclaimed land is devoted to the production of grain, hay, and cotton, and there is no crop produced on such land that is not produced elsewhere in this country to advantage. Our problem with most of these crops is the avoidance of a surplus, or the disposal of a surplus, rather than the production of what we need.

Certainly, at the present time, the need for national self-sufficiency does not justify a subsidy to land reclamation. So long as we have such large areas as we have of potential crop land susceptible of producing the things we need, the necessity for subsidizing reclamation will not arise; in the distant future it may. . . .

If the subsidy is eliminated from government reclamation and expansion is actually limited to projects on which farmers can and do meet payments from returns from the land, most of the objections to government reclamation will be removed. This will answer all arguments on competition, from both sides, since in order that settlers on reclaimed land may be able to meet their payments prices must be high enough to leave a margin of profit for others. It will eliminate politics in the selection of projects, since only feasible projects, and all such projects, will be undertaken.

However, this ideal system assumes a degree of wisdom, foresight, and honesty that does not exist. . . .[22]

Teele proposed a plan for apportioning costs of reclamation on the basis of benefits which, if put into effect, would give grounds for sober thought on the part of local promoters who have much to gain and nothing to pay under the federal system of reclamation. He would ask all the people of the area to share the costs and charge the farmers just what the water is worth to them. The plan is this:

[22] Teele, *Land Reclamation*, pp. 315, 317–19, 325.

Apportion Costs on Basis of Benefits

Our present reclamation policy ignores this principle of apportioning costs to benefits. The arguments for government reclamation are based very largely on the benefits to the communities where the projects are located rather than on the benefits to the settlers who are to go on the reclaimed land, yet the latter are expected to pay the whole cost. . . .

The apportionment of cost in proportion to benefits should be a fundamental part of our reclamation policy of the future, if there is to be any public participation in reclamation. This policy can be put into effect through the irrigation district plan, by having districts formed under public supervision and including within them all property that will be benefited, not overlooking the towns and cities whose chambers of commerce are so active in demanding the undertaking of new enterprises; and requiring the approval of the districts by the counties and states, if there are to be county and state contributions, and by Congress if there is to be a Federal contribution.

This spreading of the cost over property other than the land to be reclaimed will have a tendency to check the demand for reclamation when it is not needed, but should not seriously retard reclamation if there is a real need. Private enterprise will still be free to reclaim land when it appears that the land itself can pay the cost. Certainly, if reclamation is to be undertaken because of public benefits, the reclaimed land should not be expected to repay the whole cost.

A Policy Recommended

It is the belief of the writer that the suggestion made will be the basis of our future reclamation policy. It will be necessary to work out satisfactory methods of apportioning cost and, more important, methods of protecting the farmers in reclamation districts from exploitation by the more numerous urban population within the districts, whose interests may not coincide with those of the farmers. On the latter point, it is suggested that the cost of both construction and operation and maintenance be made general obligations of the districts, to be met by a general property tax, while water users be charged rates for the use of water that will be fixed, not on the basis of yielding a return on the investment, but on the value of the water to the farmers — rates which may not exceed either what the "traffic can bear" or a reasonable return on the cost of reclamation. Such rates might be fixed as a percentage of the returns from the land, as under the Reclamation Act of 1924. The revenue arising from the rates might be applied to the cost and thus reduce the amount to be raised by taxes. As the reclaimed lands are improved, they will pay more of the cost through increased value as well as through increased production.

Such a scheme is susceptible of universal application. . . .[23]

With Teele's death on August 27, 1927, there passed from the scene in Washington the one man who devoted a busy life to the economics of irrigation.

[23] Teele, *Land Reclamation,* pp. 326–28.

28.

New Agencies and New Trends

THE EVENTS OF THE TWO DECADES following the entrance of the United States into the European conflict, known as World War I, brought a new emphasis in the problems relating to farm land. This new emphasis was stimulated by a desire for greater production during the war and for curtailed production following the war. It also was stimulated by the excessive price of land in 1919 and 1920, the depression in land values which followed, and by a long-felt need for the conservation and planned utilization of the land resources of the nation. The organization of the Division of Land Economics in the U. S. Department of Agriculture in 1919, and the organization of the Institute for Research in Land Economics by R. T. Ely in October, 1920, at the University of Wisconsin,[1] were responses to the new impulse to study land utilization and other undeveloped phases of land economics.

With these two new agencies to promote the work, a new era was initiated in which land values, land settlement, land utilization and land use planning became focal centers of interest and research. All these new lines of work, as well as continued work in land tenure and irrigation economics, became closely related to state and national land policy.

The presence of David Houston in Washington as Secretary of Agriculture, himself an economist, provided the atmosphere for the beginning of this development. When, in 1918, the work in the Office of Farm Management did not suit Secretary Houston, he appointed a committee[2] to study the work of that office and to recommend a plan for its reorganization. On February 26, 1919, that committee recom-

[1] "In October 1922 this organization was incorporated as the Institute for Research in Land Economics and Public Utilities . . . ." From "Institute for Research in Land Economics and Public Utilities," typewritten *Report* to May 23, 1923. (See p. 1.) The Institute was moved to Northwestern University, Evanston, in 1925.

[2] Members of the committee were: R. L. Adams, Andrew Boss, J. I. Falconer, J. A. Foord, N. C. Murray, H. C. Taylor, C. W. Thompson, E. H. Thomson, and G. F. Warren. See "Report of Committee Appointed by the Secretary of Agriculture To Consider Plan of Organization, Scope of Work, and Projects for the Office of Farm Management, and Methods of Procedure in Making Cost of Production Studies," U. S. D. A., Office of the Secretary, *Circular* 132 (Washington, 1919), p. 3.

mended the setting up of a Bureau of Farm Management and Farm Economics, with seven divisions, one of which carried the general title, Land Utilization, with three sub-headings as follows: (a) Land Resources and Utilization, (b) Land Settlement, and (c) Landownership and Tenancy.[3]

In May 1919, Secretary Houston appointed another special committtee[4] to outline in greater detail the land work proposed by the previous committee. The new committee agreed upon the term "land economics" instead of "land utilization" for the name of the new division in the Office of Farm Management and Farm Economics. They proposed an outline of the field:

OUTLINE OF STUDIES TO BE MADE

The conference called to outline the field of investigation in Land Economics, one of the sections of the proposed Bureau of Farm Management and Farm Economics, together with the methods of coordinating the investigational activities of the section with those of other agencies, submits the following, which we believe to be a comprehensive outline of the field to be investigated:

Land Economics

A. Land resources.
B. Land values.
C. Land ownership and tenancy.
D. Land settlement and colonization.
E. Land policies.

A. Land resources (considered from the standpoint of economic use):
   I. Classification according to location, physical characteristics, ownership and present uses.
      1. Land not now in farms.
      2. Land now in farms.
   II. Land utilization.
      1. Conditions which explain present use or nonuse.
      2. Desirable changes in mode of use.
      3. Costs of making such changes, and probable economic advantages.

B. Land values:
   I. Comparative land values in various regions.
   II. Changes in land values.
   III. Relations of land values and land rents.
   IV. Effect of community environment on land rents and land values.
   V. Other conditions affecting land rent and land values.

C. Land ownership and tenancy:
   I. Characteristics and relative extent.

[3] *Circular* 132, p. 7.

[4] The recommendations of the committee were submitted by: C. L. Stewart, Theodore Macklin, J. A. Preus, C. S. Ucker, E. B. Linfield, J. N. Hagan, C. E. Allred, L. C. Gray, Milton Whitney *per* T. D. Rice, W. A. Taylor, S. A. Lindsay, A. G. T. Moore, R. T. Ely, O. E. Baker, C. V. Piper, E. C. C. Chilcott, N. C. Murray, H. T. Cory, R. P. Brooks, Raphael Zon, Elwood Mead, H. M. Cottrell, H. C. Taylor, and G. I. Christie. See "Report of Committee Appointed by the Secretary of Agriculture To Consider the Subject of Land Economics as One of the Divisions of Research Work of the Proposed Bureau of Farm Management and Farm Economics," U.S.D.A., Office of the Secretary, *Circular* 138 (Washington, 1919), p. 4.

1. Full ownership (classification by public and private, by race and nationality).
2. Common lands — extent, character of rights.
3. Mortgage indebtedness.
4. Tenancy.
   a. Extent and distribution.
   b. Increase in tenancy — absolute and relative.
   c. Forms of tenancy.
   d. Improvement of tenant contracts.
   e. Informal relations of landlords and tenants.
   f. Determination of unexhausted improvements and settlement of claims.

II. Conditions determining extent and character of land ownership and tenancy.
1. Inheritance and bequest.
2. Land values.
3. Physical conditions of regions and types of farming.
4. Personal characteristics of population and relative individual advantages.
5. Land policies.
6. Rural credit systems.
7. Time required for laborers and tenants to attain to ownership.

III. Effects of ownership and tenancy in regard to —
1. Maintenance of soil fertility.
2. Productiveness per acre, per man, and per unit of invested capital.
3. Adequacy of farm improvements and equipment.
4. The choice of farm enterprises and methods of conducting them.
5. Distribution of farm income.
6. Standards of living and of thrift.
7. Shifting of rural population.
8. Community organization, cooperation, and social relationship.

D. Land settlement and colonization (in undeveloped and developed areas):
I. Selection of land and settlers.
II. Methods of settlement.
III. Agencies, public and private.
IV. Causes of success and failure.
V. Possible scope and rapidity of settlement.

E. Land policies.
I. Title registration and transfer.
II. Methods of facilitating acquisition of farms.
III. Land commissions or courts.
IV. Landlord's lien.
V. Land-selling agencies.
VI. Methods of alienating public land.
VII. Relation of taxation of land to land problems.[5]

L. C. Gray was placed in charge of the new Division of Land Economics. He and his staff viewed tenancy as a legitimate and useful rung in the agricultural ladder rather than a menace. Their 94-page article, prepared in 1923, is a comprehensive, statistical, historical, geographical view of farm ownership and tenancy in the United

[5] *Circular* 138, pp. 5–6.

States.[6] Their realistic treatment of the subject pointed toward a more rational view of the various forms of land tenure and may be looked upon as rounding out a quarter of a century of study of landownership and tenancy. They recognized, however, that efforts should be made to keep the percentage of tenancy within proper bounds. Realizing that some of the conclusions to which their studies had brought them were not in harmony with the gloomy views of tenancy which had been proclaimed by popular writers on the subject, they said in conclusion:

> The preceding discussion has not been directed to the purpose of indicating that tenancy is a superior form of tenure. If this should appear to be the case, it is owing to the necessity of submitting facts to disprove the all too general assumption that tenancy is always, in itself, an inferior and undesirable form, and to attribute to it a great many evil conditions which are really due to other causes. These conditions include unequal distribution of wealth, habits of land exploitation and instability of occupancy largely the outgrowth of the comparative abundance of land resources in our recent past, the persistence in certain sections of a one-crop system of farming, and the personal illiteracy, inexperience, thriftlessness, and inertia of certain individuals. To assume that some artificial plan for converting tenants into landowning farmers would remove all of these conditions is to follow an illusion.
>
> Farm tenancy, considered as a method of acquiring the use of land, is adapted to the special circumstances of a large proportion of farmers, because of their lack of experience and available capital. However, this point of view does not imply that all existing forms of tenancy in this country are ideal, or that a do-nothing policy is justified. In fact, there is need for the development of a positive and constructive policy with respect to American land tenure, a policy that would necessarily involve the cooperation of the Federal Government and the States. Such a policy would not consist of any single panacea, but would involve a number of coordinated measures, which can here be considered only in brief outline.
>
> It would be unfortunate to make the road to farm ownership so easy that farm ownership could be achieved by those who are unready. However, it is widely recognized that it would be good public policy to remove unnecessary obstacles to the achievement of ownership by employing methods such as the following:
>
> Credit Facilities for Tenants
> A Policy of Land Settlement
> Standardization of Land Titles
> Improved Methods of Land Valuation
> Modifying the Speculative Element in Farm Land Valuations
> Improvement of the Tenant Contract and the Relations of Landlord and Tenant
> Organizations of Landlords and of Tenants
> Legislative Methods of Standardizing and Improving the Tenant
>
> Contract . . . it may be found desirable to establish by legislation arrangements for guaranteeing to tenants reimbursement for improvements made by them, and for insuring landlords against dilapidations by tenants. It may also be desirable to provide for protecting tenants against arbitrary

[6] L. C. Gray, C. L. Stewart, H. A. Turner, J. T. Sanders, and W. J. Spillman, "Farm Ownership and Tenancy," U.S.D.A., *Yearbook,* 1923 (Washington, 1924), pp. 507–600.

and unwarranted disturbance as well as to compensate landlords for unwarranted desertion by tenants.[7]

The way in which the subject of land utilization was initiated in the Division of Land Economics is illustrated by an article on the subject in the *Yearbook* for 1923.[8] Of this article, Leonard Salter said, "This report . . . marks a significant turning point in land policy thinking."[9] The purpose of the article is stated as:

> The dominant characteristic of American economic life has been abundance of land resources. The assumption of this abundance has colored our habits of thought and become the essential foundation for our economic policy, both individual and public. This national tradition was first seriously challenged by the conservation movement, which caused our people to pause and consider whether our amazing population growth and two centuries of exploitation of natural resources might have altered the outlook. However, that movement directed attention principally to the forests, mineral resources, and water powers, whereas the object of this article is to consider our present situation and future outlook in regard to our resources available for growing the food and raw materials that must be supplied by our crop lands, pastures, and forests.
>
> This will involve (1) a summary of our present land resources and of the extent and character of present uses, and (2) an estimate of future requirements — particularly those of the next few decades — and the relation of these requirements to the potential area available for the various uses.[10]

A footnote to that *Yearbook* article shows that the Division of Land Economics worked in close co-operation with the Bureaus of Forestry, Plant Industry, Public Roads; the Divisions of Agricultural Engineering, Soils, Animal Industry, the Biological Survey, and the Extension Service. This was in harmony with a recommendation of the special committee which pointed out, in 1919, that many of the government agencies had gathered data relating to this subject which had "never been assembled, correlated, and appraised from the standpoint of the economic utilization of land."[11] Fortunately the suggestion that all these resources be utilized was taken seriously by all the bureaus concerned.

In a sketch of the development of land utilization research in the United States, M. M. Kelso stated:

> The decade of the 1920's marked the first self-conscious land utilization research. But even as all new things, that are not mutations, are traceable through a line of forebears so is that self-conscious land utilization research

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[7] Gray, *et al.*, "Farm Ownership and Tenancy," pp. 597–600.

[8] L. C. Gray, O. E. Baker, F. J. Marschner, B. O. Weitz, W. R. Chapline, Ward Shepard, and Raphael Zon, "The Utilization of Our Lands for Crops, Pasture, and Forest," U.S.D.A., *Yearbook*, 1923 (Washington, 1924), pp. 415–506.

[9] L. A. Salter, Jr., *A Critical Review of Research in Land Economics* (Minneapolis: University of Minnesota Press, 1948), p. 18. (Ph. D. Thesis, University of Minnesota, Minneapolis, 1946.)

[10] Gray, *et al.*, "The Utilization of our Lands," p. 415.

[11] See "Report of Committee Appointed by the Secretary of Agriculture To Consider the Subject of Land Economics as One of the Divisions of Research Work of the Proposed Bureau of Farm Management and Farm Economics," U.S.D.A., Office of the Secretary, *Circular* 138 (Washington, 1919), p. 6.

of twenty years ago. Between 1867 and 1879 — twelve years — there were four famous geographical and geological surveys of our then as yet unsettled West — the exploration and reports of Hayden, Wheeler, King and Powell.[12] Among the objectives of these surveys were the observation and recording of "the influence of climate, the geological formations, character and kinds of vegetation, its probable value for agriculture and grazing purposes, relative proportions of woodland, water and other qualities which affect its value for the settler."[13]

These surveys were, it is true, hardly research; they attempted to get a broad, general picture of the western country and to reach *a priori* conclusions as to its usefulness and adaptability; their purpose was to guide the Federal Government in making its policies for the disposal of these lands and to serve as a source of information for prospective settlers.

The advent of the first conservation movement under the first Roosevelt during the first decade of this century constituted the first significant public recognition that certain lands — in this case forests — were vested with a public interest sufficient to warrant active public participation in forest management. The reservation of forest and watershed lands from the unalienated public domain marked a pause in the long-established policy of pushing Federal lands into private lands. The Weeks Act of 1911 and the Clarke-McNary Act of 1924 recognized the desirability of actually bringing certain private lands back into public ownership in the interest of conservation.

This whole movement raised new issues for land utilization inquiry. By what methods and criteria was it to be determined which lands were best suited to forest and watershed protection purposes and thus affected with a sufficient public interest to warrant their retention in or recapture by the public? Ever since that first decade our U. S. Forest Service and many State Forest Departments have been making surveys and investigations by which the execution of this public policy could be carried out.

But several decades were to pass before this public notion that forest, wildlife, and recreational lands are vested with a public interest was to spread to include agricultural lands. This recent public recognition of a public interest in the use of agricultural lands did not spring full blown from nothing. It had its forebears in the land utilization research which we shall next trace.

Before and during the war, pressure of population on food supply was the ruling premise in our agrarian policy. It led to soil surveys as guides to more efficient uses and to undeveloped areas of good soil, to reclamation, to studies of soil erosion as a public problem of wasted resources already dangerously scarce and in 1919 to the creation of the Division of Land Economics, which under Dr. Gray undertook the first self-conscious investigations in land utilization.

For a decade Drs. Gray and Baker worked over and over, constantly improving and refining, the national requirements for land in the light of changing population growth, dietary habits, and technology. The studies began with the report in the 1923 Yearbook and culminated in the Report of the Land Planning Committee of the National Resources Board in 1934.[14] These studies gave a new direction to national thought about the relation of supply of land to prospective requirements. The nation was the unit of study

[12] National Conference on Land Classification, *Proceedings,* 1940, Missouri Agr. Exp. Sta. *Bulletin* 421 (Columbia, 1940), footnote 3, p. 174.

[13] U. S. Geographical Surveys West of the 100th Meridian, in charge of Capt. G. M. Wheeler, Engineer Department, U. S. Army, *Report* (Washington, 1889), 1:31.

[14] U. S. National Resources Board, *A Report on National Planning and Public Works in Relation to Natural Resources and Including Land Use and Water Resources With Findings and Recommendations,* Part 2, *Report of the Land Planning Committee* (Washington, 1934).

and the method included inventorying the resources in terms of adaptability to use, and forecasting population trends, dietary habits and technological change. Until the report of the Resources Board, concern in these studies was almost wholly with agricultural land. Not until late in the decade did they begin to develop a methodology for equating the competitive, complementary, and supplementary relations between forestry and agriculture, let alone recreation, sub-urban and other uses of rural lands. The Resources Board report is to date the most pretentious attempt and, in fact has been the last attempt, to see as a whole our national needs for land in comparison to our national land resources. . . .

Concerning this period [the 1920's] of the birth and babyhood of land utilization, several observations are pertinent to serve as points of orientation for viewing the next period. First, three "schools" formed around the question as to how much the "'future" was to enter into the study. Dr. Gray and his associates and Dr. Warren and his students made conscientious attempts to forecast the trends in land utilization — in broad categories for the nation as a whole; in specific patterns of change in local areas. To them such forecasts were imperative if land utilization research was to serve as an adequate guide to public policy and private action. At the other extreme were the inventories which foreswore any forecasting or recommending and which also made no analyses to explain existing uses — they were designed to collect data for the land purchasers and the legislators who were expected to make the analyses and the forecasts. Then there were the middle ground studies where analysis was made of the relations between land use and physical and economic factors in the environment and explanation of the land use pattern was sought but where no projection into the future and hence no forecasts and no recommendations were made.

Second, among our observations about land utilization research in this early period is the difference between two ways of forecasting the future and hence of devising recommendations for adjustment. One group characterized by Dr. Warren and his students determined the going trends in land utilization adjustment, accepted them as the future course of change and recommended those things, be they public or private action, which would facilitate the changes in land use being produced by the going trends. We might call this method that of "trend acceptance." Another group characterized by Dr. Gray and his associates analyzed not only the going trends in land utilization change but analyzed also the closely related phenomena out of which these trends in land use were being produced and recommended action, generally public, which might alter the character or force of these related phenomena and thus alter the going trends in land use change. We might characterize this method as that of "trend bending."

Third, among our observations about land utilization research in the twenties is that much of it was done for "educational" purposes quite as much as for any direct policy making significance. In fact, the decade of the twenties is not one in which much public action to aid land use adjustment took place. So all land utilization work of that decade having as its conclusions certain recommendations as to desirable programs of action were not useful directly in formulating public programs — they were useful and mightily useful in gradually stimulating thought and discussion and a rising tide of public demand that something be done about our land utilization problems. These studies made not only our professional colleagues land utilization conscious but had considerable effect on the political fraternity, leaders of public thought, and on the public itself.

Several things occurred within two years of one another that show the

suddenness with which the work of the twenties "caught on" and which ushered in the next stage in the history of land utilization research — a stage from which we are now just emerging. These several occurrences were, first, the national conference on land utilization called by Secretary Hyde in 1931, and second, the Social Science Research Council publication on "Research in Agricultural Land Utilization" published in June 1931, and, third, the first term of the second Roosevelt and the second conservation movement.[15]

[15] M. M. Kelso, "Major Trends in Land Utilization Research in the United States," New England Research Council on Marketing and Food Supply, *Proceedings,* 1941 (Mimeograph) (Boston, 1941), pp. 1–5.

29.

Public Interest in the Land

WHEN THIS BOOK WAS PLANNED, Leonard A. Salter, Jr., agreed to write the section on land economics. This was to follow completion of his Ph.D. thesis.[1] His untimely death occurred before the original plan was carried out. Instead, parts of his thesis relating to the development of land policy in the United States and a summary of the research in land utilization and land settlement in the 1920's, are quoted.

On the subject of land policy Salter said:

Revolution in Land Policy, 1870–1891

In the history of the United States of America the predominant process under which public land policies have been formulated has been the transferring of an enormous public domain to private ownership and private management.

For just about a century after the American Revolution the basic premises that dominated these land policies were that private action without public interference would assure (1) that the nation's land would be used in such a way as to supply it adequately with raw materials, and (2) that there would be nearly universal family farm ownership. These beliefs, essential parts of the "American Dream," were acknowledged explicitly and implicitly in countless ways; they have been recognized so widely by political and economic historians that they do not need reaffirmation here.

These two tenets were challenged by some federal officials and by a few magazine writers about 1870. In the following two decades they were also called into question by individual scientists and scientific societies. By 1890 the challenge was resounding, and in 1891 Congress gave the first expression of a fundamental change in its national land policies when it passed the famous Revision Act. This act marked the start of a turnabout in legislation and indicated a significant shift away from an attitude of optimism. For

[1] L. A. Salter, Jr., *A Critical Review of Research in Land Economics* (Minneapolis: University of Minnesota Press, 1948). (Ph. D. Thesis, University of Minnesota, 1946.)
The reading of the entire monograph will prove highly useful to every student of the social sciences. Salter's contribution to the subject of methodology should stimulate every research worker in the field to re-examine his methods and his purposes. This should lead to a marked improvement in the quality of the work, not only in land economics but in the whole field of agricultural economics.

the next thirty years land policies were based on an attitude of apprehension — apprehension of a resource famine and of landed monopoly and tenantry. It is in the beginning of this period of revolution in land policies that the roots of rural land economics in the United States are embedded.

The story of this important period in land policy history has been recounted elsewhere,[2] but we are interested in a few generalizations about the economists' position in this development.

So far as the premise of proper utilization of resources is concerned, the first doubts were raised by publicists, nature scientists, and government officials. Among scientific groups the foresters took the leading role, especially after the formation of the American Forestry Congress in 1881 and the American Forestry Association in 1884. Of this agitation Robbins says, "The attack upon the public land system by scientific organizations and prominent periodicals in the early eighties was perhaps unprecedented in the annals of land history."[3] In the same connection, Hibbard remarks that the conservation movement in the United States "owes its origin to the work of science."[4]

The possibilities of maintaining widespread family farm ownership were not doubted so soon; nor were they raised with the same degree of organized pressure as was the case with the assumption of plentiful resources. Agitation and discussion were widespread, however, especially after the census of 1880 reported on the percentage of tenancy and the census of 1890 specifically announced that a frontier line of settlement no longer existed.[5] Certain individuals made much of these facts, notably Henry George, who attained international prominence as a sponsor of land reforms and who, as early as 1879, had called attention to the impending lack of land for free settlement and the growth of farm tenancy.[6]

During this period American economists were, for the most part, concentrating on the deductive theories of the English and the Austrian schools of economics. Beginning in the 1880's however, a group appeared in this country which had its ties not so much with the English and Austrian as with the German tradition in economics. It was through these German-oriented American economists that the field of economics was attached to the emerging reform in American land policies.

The Economists and Land Policies

In 1885 the insurgents, led by Professors Richard T. Ely, Simon N. Patten, and E. J. James, established the American Economic Association, largely in protest against the laissez-faire attitude which characterized the English and Austrian schools; and they used the Association to direct economists' attention in this country to pressing questions of public policy.[7]

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[2] *E.g.*, R. M. Robbins, *Our Landed Heritage* (Princeton: Princeton University Press, 1942), Chaps. 17–19; B. H. Hibbard, *A History of the Public Land Policies* (New York: The Macmillan Company, 1924), Chap. 22; C. R. Van Hise, *The Conservation of Natural Resources in the United States* (New York: The Macmillan Company, 1910), pp. 2–14; John Ise, *The United States Forest Policy* (New Haven: Yale University Press, 1920), pp. 34–118 *passim*.

[3] Robbins, *Our Landed Heritage*, p. 291.

[4] Hibbard, *Public Land Policies*, p. 472.

[5] J. T. Adams, *The Epic of America* (Boston: Little, Brown, and Company, 1932), p. 303; F. J. Turner, "The Significance of the Frontier in American History," American Historical Association, *Annual Report*, 1893 (Washington, 1894), pp. 199–227.

[6] Henry George, *Progress and Poverty* (50th anniversary edition; New York: Robert Schalkenback Foundation, 1929; reprinted, 1942), pp. 388–94. In 1916, R. T. Ely told the economists that "Henry George is to be praised because he has brought forward the land problem as one of paramount importance." In "Landed Property as an Economic Concept and as a Field of Research," *American Economic Review, Supplement* 7:33, (March 1917).

[7] R. T. Ely, "Conservation and Economic Theory," in R. T. Ely, R. H. Hess, C. K. Leith, and T. N. Carver, *The Foundations of National Prosperity* (New York: The Macmillan Company, 1917), pp. 11–15; H. C. Taylor and G. S. Wehrwein, "Richard T. Ely," *Journal of Land and Public Utility Economics*, 19:389–90 (November 1943); and especially R. T. Ely, *Ground Under Our Feet* (New York: The Macmillan Company, 1938), particularly pp. 132–64 and Appendix II.

There were both direct and indirect connections between the insurgent economists and the debate on national land policies. The direct tie was German scientific forestry. It is no coincidence that the leaders in American forestry were German or German-trained and that the upstart economists took advanced work in Germany.[8] In Professor Karl Knies's lectures at Heidelberg, for example, "Forestry was the main feature of conservation developed in the lectures . . . on Practical National Economics and Economic policy."[9]

The indirect, but certainly no less important, connection was that the German economists stayed close to the concept of political economy at a time when others were tending to center attention on the private, managerial approach. While the German-influenced American economists certainly were not wholly divorced from and free of neo-classical economics, they nevertheless were affected by the German emphasis on (1) the historical or evolutionary aspects of economic behavior, (2) the relationship between law and economics in social institutions, and (3) the importance of current questions of public policy.[10] It is not surprising, therefore, that some of the economists with training in this tradition, at the turn of the century in this country, directed attention to land policy questions. It is of signal importance to stress the fact of this German background, for it made possible the development of an interest in land economics and affected the approach which land economists took in their work.[11]

In 1890 when the Association for the Advancement of Science petitioned Congress to change the public land system, the American Economic Association showed an interest in the forestry movement. It invited B. E. Fernow to address its annual meeting and issued a special publication on the need of public action in respect to forestry problems, written by Fernow, E. A. Bowers, and Gifford Pinchot – three outstanding leaders of the forestry crusade.[12]

Over the ensuing years the Association promoted discussion of resource and land ownership problems in its publications, and other economic journals also devoted attention to these topics. In addition, during the agricultural depression of the nineties, the economists discussed general questions of farmer movements and farm relief. Even in theoretical debates, land rent became a chief topic of controversy.[13]

In 1892 Ely went from Johns Hopkins to the University of Wisconsin where he proceeded to build a department in which there would be integration of social sciences and a splicing of academic and public interests. As early as 1896, he had Fernow give a course in forestry economics, the first on this continent or in England. Of the early work in land policy problems at Wisconsin, Ely says, "The teaching of conservation at the University of Wiscon-

[8] Hibbard says, "The conservation enterprise owes . . . perhaps most of all to Dr. B. E. Fernow" who "had been a forester and conservationist in Germany" (*Public Land Policies,* pp. 472–73). Ise says that "to the influence of . . . an official of the Prussian Forestry Department can be traced the meeting of the American Forestry Congress" (*U. S. Forest Policy,* p. 95). Robbins states that Carl Schurz "should also be given credit for focusing public attention on the need for a general revision of the whole land system" (*Our Landed Heritage,* p. 286).

[9] Ely, in *The Foundations of National Prosperity,* p. 19.

[10] See R. T. Ely, *Outlines of Economics* (New York: The Macmillan Company, 1922), Appendix A; Alexander Gray, *The Development of Economic Doctrine* (New York: Longmans, Green & Co., 1931), Chap. 8; J. R. Commons, *Institutional Economics* (New York: The Macmillan Company, 1934), p. 115. For historical backgrounds of England and Germany, see Karl Polanyi, *The Great Transformation* (New York: Farrar & Rinehart, Inc., 1944), especially Chap. 15.

[11] G. S. Wehrwein, "Institutional Economics and Land Economics Theory," *Journal of Farm Economics* 23:161–70, (February 1941). Also note discussion of this paper by John Ise, *loc cit.,* pp. 171–72.

[12] American Economic Association, *Publications,* Vol. 6, No. 3 (May 1891).

[13] See H. C. Taylor, "Early History of Agricultural Economics," *Journal of Farm Economics* 22:84–97, (February 1940). Among the specific articles of the time: G. K. Holmes, "Farm Tenancy in the United States," *Quarterly Journal of Economics* 10:34–53, (October 1895); A. B. Hart, "The Disposition of Our Public Lands," *Quarterly Journal of Economics* 1:169–83; (January 1887); F. A. Fetter, "The Relations Between Rent and Interest," with discussion, American Economic Association, *Publications* (ser. 3) 5:176–240, (February 1904).

sin, influenced and paved the way for Roosevelt's great conservation movement and the widespread land programs of the present day. . . . I am confident that very soon after I came to Wisconsin in 1892 we began a systematic treatment of what is now called land economics. I treated the whole subject under the awkward title, Landed Property and the Rent of Land."[14]

The Conservation Era, 1891–1921

The thirty years following the Revision Act of 1891 may properly be called the Conservation Era in American history. The fear of a resource famine and of agricultural tenancy was accentuated by increased immigration, expanded industrialization, and then World War I [1914–1918]. The Revision Act, referred to by Hibbard as "the most signal act yet performed by Congress in the direction of a national land policy,"[15] provided, among other things, the original basis for the allocation of some 150 million acres in the public domain as national forest reserves under Presidents Harrison, Cleveland, McKinley, and Roosevelt. Although this program was ended in 1907, four years later Congress provided for additional national forests by actual purchase of private forest lands. The revolution in forest policy was complete.[16]

As early as 1906 some coal lands of the public domain were set aside; but after the National Conservation Congress in 1908, the withdrawal policy was extended to include public lands valuable for oil, potash, copper, phosphates, and other minerals. These actions, all aimed at locking up the nation's mineral storehouse in order to guard it against too rapid and unwise exploitation, were coupled with a series of measures allowing the regulated removal of the minerals under leases. An over-all leasing policy was written into the General Mineral Land Leasing Act of 1920.[17]

In respect to farm land, the Conservation Era was marked by legislative attempts to provide for the homesteading of the less desirable lands that had been avoided during the westward advance of the frontier. In the Desert Land Act of 1877 and in the Carey Act of 1894, Congress made some effort to encourage the cultivation of arid lands under irrigation; but in the Reclamation Act of 1902, a basic change in the approach to irrigation development was made. This act has ever since been the fundamental rock of our national irrigation program.[18] To assist and encourage the establishment of dry farms and grazing homesteads in the arid regions, Congress enacted the Kinkaid Act of 1904, the Enlarged Homestead Act of 1912, and the Stock-raising Homestead Act of 1916.

The second branch of land policy — that having to do with the condition of land ownership — received a good deal of attention in this period, but this interest resulted in only one major stroke of legislation, the Federal Farm Loan Act of 1916. As the percentage of tenanted and mortgaged farms increased from census to census, interest heightened in the possibilities of public aid to help farmers gain more complete ownership of the land. The census of 1910 included a special study of farm mortgages, and in 1913 commissions were

[14] Ely, *Ground Under Our Feet,* p. 191. Just what Ely means by having "paved the way" for Theodore Roosevelt's conservation movement is not clear and probably should not be taken too literally. That his work has exerted considerable influence on both early and more recent land policy developments can hardly be doubted.

[15] Hibbard, *Public Land Policies,* p. 532. The appraisal is stressed by Professor Paul W. Gates. See particularly his "The Homestead Law in an Incongruous Land System," *American Historical Review* 41:652–81, (July 1936).

[16] Hibbard, *Public Land Policies,* pp. 530–31.

[17] Hibbard, *Public Land Policies,* Chap. 25; Robbins, *Our Landed Heritage,* Chaps. 20–23; W. W. Atwood, "The Conservation Movement in America," in *Our Natural Resources and Their Conservation,* ed. by A. E. Parkins and J. R. Whitaker (New York: J. Wiley and Sons, Inc., 1939), Chap. 1; *Conference of Governors in the White House,* Washington, D. C., May 13–15, 1908, *Proceedings* (Washington, 1909).

[18] R. P. Teele, *The Economics of Land Reclamation in the United States* (Chicago: A. W. Shaw Company, 1927), p. 69.

sent both by Congress and by private groups to study European programs. After extensive debate the federal land bank system was established by the 1916 legislation.

In this program the "emphasized objectives" were "the checking of the growth of tenancy and the promotion of farm ownership."[19] But rural credit reforms were also tied up with the crusade to conserve resources. It was felt that "the work of replenishing impoverished soils, opening up new fields, and stimulating agriculture in all its branches cannot be long deferred, because the present rate of increase in population is greater than the rate of increase in the means of subsistence, and this youngest among the nations of the earth is in danger of being unable to feed and clothe its people in spite of matchless natural resources. The farmers' debt may be expected to augment at a more rapid progression than in the past . . ." and agriculture will require "enormous funds."[20]

During the brisk activity of the Conservation Era, Ely kept in intimate touch with official developments, partly through Charles Van Hise, president of the University of Wisconsin, who was close to Theodore Roosevelt in promoting the nationwide movement. Ely also pushed farther his interest in landed property, both in his teaching and in his writings.[21] Even more important, he encouraged several graduate students to pursue serious work on land policy problems.

One student, Henry C. Taylor, perplexed by the farmer agitation of the 1890's, was anxious to study the economics of the agricultural problems of the day, and in this he was stimulated by Ely and W. A. Scott.

. . . To Taylor, a focal point in agricultural economics was the goal of farm ownership. . . .

B. H. Hibbard, who also studied under Ely and spent some time in German universities, later joined Taylor's staff and did a good deal of early work on the growth of farm tenancy in the United States. He continued work in Wisconsin on land tenure problems and embarked on a long-range study of federal land policies, a topic on which Wisconsin students published a whole series of studies. . . .

Concepts of Land Economics

In terms of the literature of the profession, all these early trends were capped by the presentation of a paper in 1916 before the American Economic Assoiation by Richard T. Ely, entitled "Landed Property As an Economic Concept and As a Field of Research." In it, Ely argued that although "We are face to face with the gravest economic problems arising out of landed property," available "economic treatises" offer "little to help us in their solution." His discussion of the concept of landed property emphasized the need for land classification. Then he presented a "rough classification of topics" for research in the field.[22] They were these:

1. Topics connected with terminology.

[19] A. G. Black, "Some Current Problems in Agricultural Credit," *Journal of Farm Economics* 23:42, (February 1941); C. W. Thompson, "The Federal Farm Loan Act," *American Economic Review, Supplement* 7:124, (March 1917).

[20] M. T. Herrick and R. Ingalls, *Rural Credits, Land and Cooperative* (New York: D. Appleton and Company, 1919 [Copyrights dated 1914 and 1915]), pp. 6–7.

[21] R. T. Ely, *Studies in the Evolution of Industrial Society* (New York: The Macmillan Company, 1903); R. T. Ely, *Property and Contract in Their Relation to the Distribution of Wealth* (New York: The Macmillan Company, 1914); Ely, *et al., The Foundations of National Prosperity;* A. F. Gustafson, C. H. Guise, W. J. Hamilton, Jr., and H. Ries, *Conservation in the United States* (Ithaca: Comstock Publishing Company, Inc., 1944). See also papers by R. T. Ely and R. H. Hess, presented at the Pan American Scientific Congress sessions on "Conservation of Natural Resources" in 1915–16, *Proceedings of the Second Pan American Scientific Congress* (Washington, 1917), 3:10–21, 26–37.

[22] Ely, "Landed Property as an Economic Concept. . . ." (See footnote 6, p. 857.)

2. Problems of historical nature — history of land utilization, history of land policies, history of theories.
3. Other theoretical questions.
4. Conservation topics.
5. Socialization of land — public policy and private and public land ownership and control.
6. Taxation . . . and other public revenues from land.
7. Relation of land to the human element — agricultural labor, farm tenancy, land ownership attainment.
8. Substitutes for free land. New opportunities other than free land.
9. Contemporary land policies, actual and proposed. Enlargement of farm ownership, land reforms, foreign experience.

This paper represented the first formal attempt to round up into an integrated branch of social science some of the areas of work into which economists had moved during the Conservation Era. . . .

In 1917 W. J. Spillman presented a paper to the American Economic Association on the work of his office in the field of land classification and tenure.[23] The following list includes all the main items he mentioned:

I. Land resources
   A. Land classification (an inventory of resources)
   B. Land utilization (land management on margins of use)
      1. stump-land farming
      2. arid, semiarid ranching and farming
      3. farm forestry
      4. pastures

II. Landed property
   A. Land ownership
   B. Farm tenancy
   C. Land values

A comparison of this outline of work under way with Ely's outline of suggested topics for research given in the previous year shows that Spillman omitted the academic items, terminology, and history. Also, Spillman's list does not include conservation, which would be entered under "land resources" in the above outline, and taxation, which would be placed under the second category. . . .

Salter pointed out that Spillman's outline differs from that later set up by the committee on reorganization in three regards:

. . . (1) the setting out of land settlement and colonization as a separate topic, (2) the separation of land values as a separate topic, and (3) the category of land policies.

The land settlement topic reflects both a change in historical conditions and a difference in research approach. Baker's land classification work had been started during the early years of World War I [1914–1918] as increased demands for food supplies and farm land accentuated the fears of a land shortage. Then Spillman's staff also undertook to study the management problems of starting new-land farms. Meanwhile, however, concern over the nation's land and food supply greatly increased, and there was agitation for

[23] W. J. Spillman, "Work of the Office of Farm Management Relating to Land Classification and Land Tenure," The American Farm Management Association, *Proceedings*, 1917, pp. 40–46. Also published in American Economic Association, *Proceedings*, 1917, in the *American Economic Review, Supplement* 8:65–71, (March 1918).

and unwarranted disturbance as well as to compensate landlords for unwarranted desertion by tenants.[7]

The way in which the subject of land utilization was initiated in the Division of Land Economics is illustrated by an article on the subject in the *Yearbook* for 1923.[8] Of this article, Leonard Salter said, "This report . . . marks a significant turning point in land policy thinking."[9] The purpose of the article is stated as:

> The dominant characteristic of American economic life has been abundance of land resources. The assumption of this abundance has colored our habits of thought and become the essential foundation for our economic policy, both individual and public. This national tradition was first seriously challenged by the conservation movement, which caused our people to pause and consider whether our amazing population growth and two centuries of exploitation of natural resources might have altered the outlook. However, that movement directed attention principally to the forests, mineral resources, and water powers, whereas the object of this article is to consider our present situation and future outlook in regard to our resources available for growing the food and raw materials that must be supplied by our crop lands, pastures, and forests.
>
> This will involve (1) a summary of our present land resources and of the extent and character of present uses, and (2) an estimate of future requirements — particularly those of the next few decades — and the relation of these requirements to the potential area available for the various uses.[10]

A footnote to that *Yearbook* article shows that the Division of Land Economics worked in close co-operation with the Bureaus of Forestry, Plant Industry, Public Roads; the Divisions of Agricultural Engineering, Soils, Animal Industry, the Biological Survey, and the Extension Service. This was in harmony with a recommendation of the special committee which pointed out, in 1919, that many of the government agencies had gathered data relating to this subject which had "never been assembled, correlated, and appraised from the standpoint of the economic utilization of land."[11] Fortunately the suggestion that all these resources be utilized was taken seriously by all the bureaus concerned.

In a sketch of the development of land utilization research in the United States, M. M. Kelso stated:

> The decade of the 1920's marked the first self-conscious land utilization research. But even as all new things, that are not mutations, are traceable through a line of forebears so is that self-conscious land utilization research

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[7] Gray, *et al.*, "Farm Ownership and Tenancy," pp. 597–600.

[8] L. C. Gray, O. E. Baker, F. J. Marschner, B. O. Weitz, W. R. Chapline, Ward Shepard, and Raphael Zon, "The Utilization of Our Lands for Crops, Pasture, and Forest," U.S.D.A., *Yearbook*, 1923 (Washington, 1924), pp. 415–506.

[9] L. A. Salter, Jr., *A Critical Review of Research in Land Economics* (Minneapolis: University of Minnesota Press, 1948), p. 18. (Ph. D. Thesis, University of Minnesota, Minneapolis, 1946.)

[10] Gray, *et al.*, "The Utilization of our Lands," p. 415.

[11] See "Report of Committee Appointed by the Secretary of Agriculture To Consider the Subject of Land Economics as One of the Divisions of Research Work of the Proposed Bureau of Farm Management and Farm Economics," U.S.D.A., Office of the Secretary, *Circular* 138 (Washington, 1919), p. 6.

of twenty years ago. Between 1867 and 1879 — twelve years — there were four famous geographical and geological surveys of our then as yet unsettled West — the exploration and reports of Hayden, Wheeler, King and Powell.[12] Among the objectives of these surveys were the observation and recording of "the influence of climate, the geological formations, character and kinds of vegetation, its probable value for agriculture and grazing purposes, relative proportions of woodland, water and other qualities which affect its value for the settler."[13]

These surveys were, it is true, hardly research; they attempted to get a broad, general picture of the western country and to reach *a priori* conclusions as to its usefulness and adaptability; their purpose was to guide the Federal Government in making its policies for the disposal of these lands and to serve as a source of information for prospective settlers.

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But several decades were to pass before this public notion that forest, wildlife, and recreational lands are vested with a public interest was to spread to include agricultural lands. This recent public recognition of a public interest in the use of agricultural lands did not spring full blown from nothing. It had its forebears in the land utilization research which we shall next trace.

Before and during the war, pressure of population on food supply was the ruling premise in our agrarian policy. It led to soil surveys as guides to more efficient uses and to undeveloped areas of good soil, to reclamation, to studies of soil erosion as a public problem of wasted resources already dangerously scarce and in 1919 to the creation of the Division of Land Economics, which under Dr. Gray undertook the first self-conscious investigations in land utilization.

For a decade Drs. Gray and Baker worked over and over, constantly improving and refining, the national requirements for land in the light of changing population growth, dietary habits, and technology. The studies began with the report in the 1923 Yearbook and culminated in the Report of the Land Planning Committee of the National Resources Board in 1934.[14] These studies gave a new direction to national thought about the relation of supply of land to prospective requirements. The nation was the unit of study

[12] National Conference on Land Classification, *Proceedings,* 1940, Missouri Agr. Exp. Sta. *Bulletin* 421 (Columbia, 1940), footnote 3, p. 174.

[13] U. S. Geographical Surveys West of the 100th Meridian, in charge of Capt. G. M. Wheeler, Engineer Department, U. S. Army, *Report* (Washington, 1889), 1:31.

[14] U. S. National Resources Board, *A Report on National Planning and Public Works in Relation to Natural Resources and Including Land Use and Water Resources With Findings and Recommendations,* Part 2, *Report of the Land Planning Committee* (Washington, 1934).

and the method included inventorying the resources in terms of adaptability to use, and forecasting population trends, dietary habits and technological change. Until the report of the Resources Board, concern in these studies was almost wholly with agricultural land. Not until late in the decade did they begin to develop a methodology for equating the competitive, complementary, and supplementary relations between forestry and agriculture, let alone recreation, sub-urban and other uses of rural lands. The Resources Board report is to date the most pretentious attempt and, in fact has been the last attempt, to see as a whole our national needs for land in comparison to our national land resources. . . .

Concerning this period [the 1920's] of the birth and babyhood of land utilization, several observations are pertinent to serve as points of orientation for viewing the next period. First, three "schools" formed around the question as to how much the "'future" was to enter into the study. Dr. Gray and his associates and Dr. Warren and his students made conscientious attempts to forecast the trends in land utilization – in broad categories for the nation as a whole; in specific patterns of change in local areas. To them such forecasts were imperative if land utilization research was to serve as an adequate guide to public policy and private action. At the other extreme were the inventories which foreswore any forecasting or recommending and which also made no analyses to explain existing uses – they were designed to collect data for the land purchasers and the legislators who were expected to make the analyses and the forecasts. Then there were the middle ground studies where analysis was made of the relations between land use and physical and economic factors in the environment and explanation of the land use pattern was sought but where no projection into the future and hence no forecasts and no recommendations were made.

Second, among our observations about land utilization research in this early period is the difference between two ways of forecasting the future and hence of devising recommendations for adjustment. One group characterized by Dr. Warren and his students determined the going trends in land utilization adjustment, accepted them as the future course of change and recommended those things, be they public or private action, which would facilitate the changes in land use being produced by the going trends. We might call this method that of "trend acceptance." Another group characterized by Dr. Gray and his associates analyzed not only the going trends in land utilization change but analyzed also the closely related phenomena out of which these trends in land use were being produced and recommended action, generally public, which might alter the character or force of these related phenomena and thus alter the going trends in land use change. We might characterize this method as that of "trend bending."

Third, among our observations about land utilization research in the twenties is that much of it was done for "educational" purposes quite as much as for any direct policy making significance. In fact, the decade of the twenties is not one in which much public action to aid land use adjustment took place. So all land utilization work of that decade having as its conclusions certain recommendations as to desirable programs of action were not useful directly in formulating public programs – they were useful and mightily useful in gradually stimulating thought and discussion and a rising tide of public demand that something be done about our land utilization problems. These studies made not only our professional colleagues land utilization conscious but had considerable effect on the political fraternity, leaders of public thought, and on the public itself.

Several things occurred within two years of one another that show the

suddenness with which the work of the twenties "caught on" and which ushered in the next stage in the history of land utilization research — a stage from which we are now just emerging. These several occurrences were, first, the national conference on land utilization called by Secretary Hyde in 1931, and second, the Social Science Research Council publication on "Research in Agricultural Land Utilization" published in June 1931, and, third, the first term of the second Roosevelt and the second conservation movement.[15]

[15] M. M. Kelso, "Major Trends in Land Utilization Research in the United States," New England Research Council on Marketing and Food Supply, *Proceedings,* 1941 (Mimeograph) (Boston, 1941), pp. 1–5.

29.

Public Interest in the Land

WHEN THIS BOOK WAS PLANNED, Leonard A. Salter, Jr., agreed to write the section on land economics. This was to follow completion of his Ph.D. thesis.[1] His untimely death occurred before the original plan was carried out. Instead, parts of his thesis relating to the development of land policy in the United States and a summary of the research in land utilization and land settlement in the 1920's, are quoted.

On the subject of land policy Salter said:

Revolution in Land Policy, 1870–1891

In the history of the United States of America the predominant process under which public land policies have been formulated has been the transferring of an enormous public domain to private ownership and private management.

For just about a century after the American Revolution the basic premises that dominated these land policies were that private action without public interference would assure (1) that the nation's land would be used in such a way as to supply it adequately with raw materials, and (2) that there would be nearly universal family farm ownership. These beliefs, essential parts of the "American Dream," were acknowledged explicitly and implicitly in countless ways; they have been recognized so widely by political and economic historians that they do not need reaffirmation here.

These two tenets were challenged by some federal officials and by a few magazine writers about 1870. In the following two decades they were also called into question by individual scientists and scientific societies. By 1890 the challenge was resounding, and in 1891 Congress gave the first expression of a fundamental change in its national land policies when it passed the famous Revision Act. This act marked the start of a turnabout in legislation and indicated a significant shift away from an attitude of optimism. For

[1] L. A. Salter, Jr., *A Critical Review of Research in Land Economics* (Minneapolis: University of Minnesota Press, 1948). (Ph. D. Thesis, University of Minnesota, 1946.)
The reading of the entire monograph will prove highly useful to every student of the social sciences. Salter's contribution to the subject of methodology should stimulate every research worker in the field to re-examine his methods and his purposes. This should lead to a marked improvement in the quality of the work, not only in land economics but in the whole field of agricultural economics.

the next thirty years land policies were based on an attitude of apprehension — apprehension of a resource famine and of landed monopoly and tenantry. It is in the beginning of this period of revolution in land policies that the roots of rural land economics in the United States are embedded.

The story of this important period in land policy history has been recounted elsewhere,[2] but we are interested in a few generalizations about the economists' position in this development.

So far as the premise of proper utilization of resources is concerned, the first doubts were raised by publicists, nature scientists, and government officials. Among scientific groups the foresters took the leading role, especially after the formation of the American Forestry Congress in 1881 and the American Forestry Association in 1884. Of this agitation Robbins says, "The attack upon the public land system by scientific organizations and prominent periodicals in the early eighties was perhaps unprecedented in the annals of land history."[3] In the same connection, Hibbard remarks that the conservation movement in the United States "owes its origin to the work of science."[4]

The possibilities of maintaining widespread family farm ownership were not doubted so soon; nor were they raised with the same degree of organized pressure as was the case with the assumption of plentiful resources. Agitation and discussion were widespread, however, especially after the census of 1880 reported on the percentage of tenancy and the census of 1890 specifically announced that a frontier line of settlement no longer existed.[5] Certain individuals made much of these facts, notably Henry George, who attained international prominence as a sponsor of land reforms and who, as early as 1879, had called attention to the impending lack of land for free settlement and the growth of farm tenancy.[6]

During this period American economists were, for the most part, concentrating on the deductive theories of the English and the Austrian schools of economics. Beginning in the 1880's however, a group appeared in this country which had its ties not so much with the English and Austrian as with the German tradition in economics. It was through these German-oriented American economists that the field of economics was attached to the emerging reform in American land policies.

The Economists and Land Policies

In 1885 the insurgents, led by Professors Richard T. Ely, Simon N. Patten, and E. J. James, established the American Economic Association, largely in protest against the laissez-faire attitude which characterized the English and Austrian schools; and they used the Association to direct economists' attention in this country to pressing questions of public policy.[7]

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[2] *E.g.*, R. M. Robbins, *Our Landed Heritage* (Princeton: Princeton University Press, 1942), Chaps. 17–19; B. H. Hibbard, *A History of the Public Land Policies* (New York: The Macmillan Company, 1924), Chap. 22; C. R. Van Hise, *The Conservation of Natural Resources in the United States* (New York: The Macmillan Company, 1910), pp. 2–14; John Ise, *The United States Forest Policy* (New Haven: Yale University Press, 1920), pp. 34–118 *passim*.

[3] Robbins, *Our Landed Heritage*, p. 291.

[4] Hibbard, *Public Land Policies*, p. 472.

[5] J. T. Adams, *The Epic of America* (Boston: Little, Brown, and Company, 1932), p. 303; F. J. Turner, "The Significance of the Frontier in American History," American Historical Association, *Annual Report*, 1893 (Washington, 1894), pp. 199–227.

[6] Henry George, *Progress and Poverty* (50th anniversary edition; New York: Robert Schalkenback Foundation, 1929; reprinted, 1942), pp. 388–94. In 1916, R. T. Ely told the economists that "Henry George is to be praised because he has brought forward the land problem as one of paramount importance." In "Landed Property as an Economic Concept and as a Field of Research," *American Economic Review, Supplement* 7:33, (March 1917).

[7] R. T. Ely, "Conservation and Economic Theory," in R. T. Ely, R. H. Hess, C. K. Leith, and T. N. Carver, *The Foundations of National Prosperity* (New York: The Macmillan Company, 1917), pp. 11–15; H. C. Taylor and G. S. Wehrwein, "Richard T. Ely," *Journal of Land and Public Utility Economics*, 19:389–90 (November 1943); and especially R. T. Ely, *Ground Under Our Feet* (New York: The Macmillan Company, 1938), particularly pp. 132–64 and Appendix II.

There were both direct and indirect connections between the insurgent economists and the debate on national land policies. The direct tie was German scientific forestry. It is no coincidence that the leaders in American forestry were German or German-trained and that the upstart economists took advanced work in Germany.[8] In Professor Karl Knies's lectures at Heidelberg, for example, "Forestry was the main feature of conservation developed in the lectures . . . on Practical National Economics and Economic policy."[9]

The indirect, but certainly no less important, connection was that the German economists stayed close to the concept of political economy at a time when others were tending to center attention on the private, managerial approach. While the German-influenced American economists certainly were not wholly divorced from and free of neo-classical economics, they nevertheless were affected by the German emphasis on (1) the historical or evolutionary aspects of economic behavior, (2) the relationship between law and economics in social institutions, and (3) the importance of current questions of public policy.[10] It is not surprising, therefore, that some of the economists with training in this tradition, at the turn of the century in this country, directed attention to land policy questions. It is of signal importance to stress the fact of this German background, for it made possible the development of an interest in land economics and affected the approach which land economists took in their work.[11]

In 1890 when the Association for the Advancement of Science petitioned Congress to change the public land system, the American Economic Association showed an interest in the forestry movement. It invited B. E. Fernow to address its annual meeting and issued a special publication on the need of public action in respect to forestry problems, written by Fernow, E. A. Bowers, and Gifford Pinchot — three outstanding leaders of the forestry crusade.[12]

Over the ensuing years the Association promoted discussion of resource and land ownership problems in its publications, and other economic journals also devoted attention to these topics. In addition, during the agricultural depression of the nineties, the economists discussed general questions of farmer movements and farm relief. Even in theoretical debates, land rent became a chief topic of controversy.[13]

In 1892 Ely went from Johns Hopkins to the University of Wisconsin where he proceeded to build a department in which there would be integration of social sciences and a splicing of academic and public interests. As early as 1896, he had Fernow give a course in forestry economics, the first on this continent or in England. Of the early work in land policy problems at Wisconsin, Ely says, "The teaching of conservation at the University of Wiscon-

[8] Hibbard says, "The conservation enterprise owes . . . perhaps most of all to Dr. B. E. Fernow" who "had been a forester and conservationist in Germany" (*Public Land Policies,* pp. 472–73). Ise says that "to the influence of . . . an official of the Prussian Forestry Department can be traced the meeting of the American Forestry Congress" (*U. S. Forest Policy,* p. 95). Robbins states that Carl Schurz "should also be given credit for focusing public attention on the need for a general revision of the whole land system" (*Our Landed Heritage,* p. 286).

[9] Ely, in *The Foundations of National Prosperity,* p. 19.

[10] See R. T. Ely, *Outlines of Economics* (New York: The Macmillan Company, 1922), Appendix A; Alexander Gray, *The Development of Economic Doctrine* (New York: Longmans, Green & Co., 1931), Chap. 8; J. R. Commons, *Institutional Economics* (New York: The Macmillan Company, 1934), p. 115. For historical backgrounds of England and Germany, see Karl Polanyi, *The Great Transformation* (New York: Farrar & Rinehart, Inc., 1944), especially Chap. 15.

[11] G. S. Wehrwein, "Institutional Economics and Land Economics Theory," *Journal of Farm Economics* 23:161–70, (February 1941). Also note discussion of this paper by John Ise, *loc cit.,* pp. 171–72.

[12] American Economic Association, *Publications,* Vol. 6, No. 3 (May 1891).

[13] See H. C. Taylor, "Early History of Agricultural Economics," *Journal of Farm Economics* 22:84–97, (February 1940). Among the specific articles of the time: G. K. Holmes, "Farm Tenancy in the United States," *Quarterly Journal of Economics* 10:34–53, (October 1895); A. B. Hart, "The Disposition of Our Public Lands," *Quarterly Journal of Economics* 1:169–83; (January 1887); F. A. Fetter, "The Relations Between Rent and Interest," with discussion, American Economic Association, *Publications* (ser. 3) 5:176–240, (February 1904).

sin, influenced and paved the way for Roosevelt's great conservation movement and the widespread land programs of the present day. . . . I am confident that very soon after I came to Wisconsin in 1892 we began a systematic treatment of what is now called land economics. I treated the whole subject under the awkward title, Landed Property and the Rent of Land."[14]

The Conservation Era, 1891–1921

The thirty years following the Revision Act of 1891 may properly be called the Conservation Era in American history. The fear of a resource famine and of agricultural tenancy was accentuated by increased immigration, expanded industrialization, and then World War I [1914–1918]. The Revision Act, referred to by Hibbard as "the most signal act yet performed by Congress in the direction of a national land policy,"[15] provided, among other things, the original basis for the allocation of some 150 million acres in the public domain as national forest reserves under Presidents Harrison, Cleveland, McKinley, and Roosevelt. Although this program was ended in 1907, four years later Congress provided for additional national forests by actual purchase of private forest lands. The revolution in forest policy was complete.[16]

As early as 1906 some coal lands of the public domain were set aside; but after the National Conservation Congress in 1908, the withdrawal policy was extended to include public lands valuable for oil, potash, copper, phosphates, and other minerals. These actions, all aimed at locking up the nation's mineral storehouse in order to guard it against too rapid and unwise exploitation, were coupled with a series of measures allowing the regulated removal of the minerals under leases. An over-all leasing policy was written into the General Mineral Land Leasing Act of 1920.[17]

In respect to farm land, the Conservation Era was marked by legislative attempts to provide for the homesteading of the less desirable lands that had been avoided during the westward advance of the frontier. In the Desert Land Act of 1877 and in the Carey Act of 1894, Congress made some effort to encourage the cultivation of arid lands under irrigation; but in the Reclamation Act of 1902, a basic change in the approach to irrigation development was made. This act has ever since been the fundamental rock of our national irrigation program.[18] To assist and encourage the establishment of dry farms and grazing homesteads in the arid regions, Congress enacted the Kinkaid Act of 1904, the Enlarged Homestead Act of 1912, and the Stock-raising Homestead Act of 1916.

The second branch of land policy — that having to do with the condition of land ownership — received a good deal of attention in this period, but this interest resulted in only one major stroke of legislation, the Federal Farm Loan Act of 1916. As the percentage of tenanted and mortgaged farms increased from census to census, interest heightened in the possibilities of public aid to help farmers gain more complete ownership of the land. The census of 1910 included a special study of farm mortgages, and in 1913 commissions were

[14] Ely, *Ground Under Our Feet,* p. 191. Just what Ely means by having "paved the way" for Theodore Roosevelt's conservation movement is not clear and probably should not be taken too literally. That his work has exerted considerable influence on both early and more recent land policy developments can hardly be doubted.

[15] Hibbard, *Public Land Policies,* p. 532. The appraisal is stressed by Professor Paul W. Gates. See particularly his "The Homestead Law in an Incongruous Land System," *American Historical Review* 41:652–81, (July 1936).

[16] Hibbard, *Public Land Policies,* pp. 530–31.

[17] Hibbard, *Public Land Policies,* Chap. 25; Robbins, *Our Landed Heritage,* Chaps. 20–23; W. W. Atwood, "The Conservation Movement in America," in *Our Natural Resources and Their Conservation,* ed. by A. E. Parkins and J. R. Whitaker (New York: J. Wiley and Sons, Inc., 1939), Chap. 1; *Conference of Governors in the White House,* Washington, D. C., May 13–15, 1908, *Proceedings* (Washington, 1909).

[18] R. P. Teele, *The Economics of Land Reclamation in the United States* (Chicago: A. W. Shaw Company, 1927), p. 69.

sent both by Congress and by private groups to study European programs. After extensive debate the federal land bank system was established by the 1916 legislation.

In this program the "emphasized objectives" were "the checking of the growth of tenancy and the promotion of farm ownership."[19] But rural credit reforms were also tied up with the crusade to conserve resources. It was felt that "the work of replenishing impoverished soils, opening up new fields, and stimulating agriculture in all its branches cannot be long deferred, because the present rate of increase in population is greater than the rate of increase in the means of subsistence, and this youngest among the nations of the earth is in danger of being unable to feed and clothe its people in spite of matchless natural resources. The farmers' debt may be expected to augment at a more rapid progression than in the past . . ." and agriculture will require "enormous funds."[20]

During the brisk activity of the Conservation Era, Ely kept in intimate touch with official developments, partly through Charles Van Hise, president of the University of Wisconsin, who was close to Theodore Roosevelt in promoting the nationwide movement. Ely also pushed farther his interest in landed property, both in his teaching and in his writings.[21] Even more important, he encouraged several graduate students to pursue serious work on land policy problems.

One student, Henry C. Taylor, perplexed by the farmer agitation of the 1890's, was anxious to study the economics of the agricultural problems of the day, and in this he was stimulated by Ely and W. A. Scott.

. . . To Taylor, a focal point in agricultural economics was the goal of farm ownership. . . .

B. H. Hibbard, who also studied under Ely and spent some time in German universities, later joined Taylor's staff and did a good deal of early work on the growth of farm tenancy in the United States. He continued work in Wisconsin on land tenure problems and embarked on a long-range study of federal land policies, a topic on which Wisconsin students published a whole series of studies. . . .

Concepts of Land Economics

In terms of the literature of the profession, all these early trends were capped by the presentation of a paper in 1916 before the American Economic Assoiation by Richard T. Ely, entitled "Landed Property As an Economic Concept and As a Field of Research." In it, Ely argued that although "We are face to face with the gravest economic problems arising out of landed property," available "economic treatises" offer "little to help us in their solution." His discussion of the concept of landed property emphasized the need for land classification. Then he presented a "rough classification of topics" for research in the field.[22] They were these:

1. Topics connected with terminology.

[19] A. G. Black, "Some Current Problems in Agricultural Credit," *Journal of Farm Economics* 23:42, (February 1941); C. W. Thompson, "The Federal Farm Loan Act," *American Economic Review, Supplement* 7:124, (March 1917).

[20] M. T. Herrick and R. Ingalls, *Rural Credits, Land and Cooperative* (New York: D. Appleton and Company, 1919 [Copyrights dated 1914 and 1915]), pp. 6–7.

[21] R. T. Ely, *Studies in the Evolution of Industrial Society* (New York: The Macmillan Company, 1903); R. T. Ely, *Property and Contract in Their Relation to the Distribution of Wealth* (New York: The Macmillan Company, 1914); Ely, *et al., The Foundations of National Prosperity;* A. F. Gustafson, C. H. Guise, W. J. Hamilton, Jr., and H. Ries, *Conservation in the United States* (Ithaca: Comstock Publishing Company, Inc., 1944). See also papers by R. T. Ely and R. H. Hess, presented at the Pan American Scientific Congress sessions on "Conservation of Natural Resources" in 1915–16, *Proceedings of the Second Pan American Scientific Congress* (Washington, 1917), 3:10–21, 26–37.

[22] Ely, "Landed Property as an Economic Concept. . . ." (See footnote 6, p. 857.)

2. Problems of historical nature — history of land utilization, history of land policies, history of theories.
3. Other theoretical questions.
4. Conservation topics.
5. Socialization of land — public policy and private and public land ownership and control.
6. Taxation . . . and other public revenues from land.
7. Relation of land to the human element — agricultural labor, farm tenancy, land ownership attainment.
8. Substitutes for free land. New opportunities other than free land.
9. Contemporary land policies, actual and proposed. Enlargement of farm ownership, land reforms, foreign experience.

This paper represented the first formal attempt to round up into an integrated branch of social science some of the areas of work into which economists had moved during the Conservation Era. . . .

In 1917 W. J. Spillman presented a paper to the American Economic Association on the work of his office in the field of land classification and tenure.[23] The following list includes all the main items he mentioned:

I. Land resources
   A. Land classification (an inventory of resources)
   B. Land utilization (land management on margins of use)
      1. stump-land farming
      2. arid, semiarid ranching and farming
      3. farm forestry
      4. pastures

II. Landed property
   A. Land ownership
   B. Farm tenancy
   C. Land values

A comparison of this outline of work under way with Ely's outline of suggested topics for research given in the previous year shows that Spillman omitted the academic items, terminology, and history. Also, Spillman's list does not include conservation, which would be entered under "land resources" in the above outline, and taxation, which would be placed under the second category. . . .

Salter pointed out that Spillman's outline differs from that later set up by the committee on reorganization in three regards:

. . . (1) the setting out of land settlement and colonization as a separate topic, (2) the separation of land values as a separate topic, and (3) the category of land policies.

The land settlement topic reflects both a change in historical conditions and a difference in research approach. Baker's land classification work had been started during the early years of World War I [1914–1918] as increased demands for food supplies and farm land accentuated the fears of a land shortage. Then Spillman's staff also undertook to study the management problems of starting new-land farms. Meanwhile, however, concern over the nation's land and food supply greatly increased, and there was agitation for

[23] W. J. Spillman, "Work of the Office of Farm Management Relating to Land Classification and Land Tenure," The American Farm Management Association, *Proceedings*, 1917, pp. 40–46. Also published in American Economic Association, *Proceedings*, 1917, in the *American Economic Review, Supplement* 8:65–71, (March 1918).

public programs of land settlement beyond that provided by the Reclamation Act and the modified homestead acts, and for credit aid to farm purchasers beyond that provided by the Farm Loan Act. Several states launched planned colonization projects or rural credit schemes or both. In addition, after this country entered the war, there was further clamor for land settlement aids as a part of a veterans' conpensation policy.[24]

Under these conditions, there was a need for broader studies that would encompass the whole range of settlement problems. Such questions fit better into the terms of reference of the "political economy" group of agricultural economists than into those of the "farm practice" group of farm management specialists. Ely, Hibbard, John D. Black, and L. C. Gray initiated studies of colonization and credit policies in the northern Lake States.[25]

Spillman listed questions relating to land values as a subcategory of "property in land," but the committee listed it separately. This difference reflects the changed conditions of the farm real estate market during the war years. In 1916 land values were rising sufficiently fast to be noted as a matter of concern, but their upward spiral in the following years became a matter of exceptional national significance.[26]

Land Utilization

The phrase "land utilization" came into use with a special significance with the organization in 1919 of the Division of Land Economics in the Office of Farm Management and Farm Economics of the U. S. Department of Agriculture. Farming makes use of land, silvaculture makes use of land, and land is used for residential and recreational purposes. The subject matter of research in land utilization is not farm management, forestry, or the management of public parks or golf courses. It has to do with the economic principles to be followed in determining to which of the various possible uses land should be put. Should certain semi-arid lands be in farms, in national and state parks, or used as open range for the grazing of livestock? Should the cutover timber lands of the Great Lakes States, for example, be converted into farms, reforested, or used for recreational purposes? Of the work in this field Salter said:

> Following World War I [1914–1918] there occurred a basic change in the national land problem, commensurate with that exemplified by the Revision Act of 1891. After a 30-year period of constantly growing fears of food scarcity, an abundance, if not a surplus, came to be the subject of concern. One signal was the sharp reaction in farm prices and the settling back of farm land values. At this time, the Division of Land Economics made an important contribution by taking a long view of the agricultural situation and by calling attention to some deep-seated factors that were at work.

The 1923 Report

Up to 1921 Baker and his staff had been describing the geography of

[24] See B. H. Hibbard, "The Utilization of Land Not in Farms," *American Economic Review, Supplement* 8:55–64, (March 1918); and Elwood Mead, "Government Aid and Direction in Land Settlement," in *ibid.*, 8:72–98; and discussions by R. T. Ely and G. F. Warren in the same issue, pp. 98–108. In the agricultural economics department at Minnesota, Carl Thompson had started research in farm credit very early, but before his work was published there he went to Washington where he completed some of the first work in farm credit investigations.

[25] See Salter, *Land Economics,* Chap. 5; and U. S. D. A., *Report of the Secretary,* 1919 (Washington, 1920).

[26] Salter, *Land Economics,* Chap. 7.

American agriculture and helping to determine land classifications for the 1920 census. Later the division expanded this work to include studies of the forces affecting the nation's needs for land and a determination of the national land requirements. Spurred by the establishment of a departmental Committee on Land Utilization and by the recommendations of President Harding's Agricultural Conference, the division prepared an extensive report on the national land utilization situation. This report, published in the 1923 *Yearbook,* marks a significant turning point in land policy thinking.[27]

The central thesis of the 1923 report was that there was no danger of a shortage of land for agricultural purposes and that a slow and cautious program of farm land development should replace that of eager expansion. Yet it was still felt that there was a threat of a timber shortage and that greater attention should be given to the development of forest resources. This broad view of the nation's land problem, and the facts on which it was based, changed the whole course of land economics in the succeeding years.

The philosophy of this report was embodied in federal legislation in 1924 in respect to irrigation and forestry. Many irrigation projects had run into trouble even before the postwar recession, and their difficulties were accentuated after it. After a report of a special committee known as the Fact Finders, Congress on December 5, 1924, passed an act which required careful advance investigations of the land, the settlers, and the economic feasibility of irrigation projects; and later legislation further revised the participation of the federal government in irrigation undertakings.[28]

Also in 1924, and also through a special committee's report, the Clarke-McNary Act was passed, greatly expanding the legislative basis for direct federal purchase and administration of land for forestry purposes.[29]

During this first half of the 1920 decade, two of five sections in the [Bureau of Agricultural Economics] Division of Land Economics were working on these land utilization problems. One, the land utilization section, had as its "essential objective" the determination of "the proper rate and direction of agricultural expansion and the wise distribution of our land resources between the essential uses crops, pasture, and forests." Another, the section on land reclamation, sale, and settlement, dealt with the more specific problems encountered in pushing "the extension of agriculture to lands now unused"; and it concentrated on irrigation project areas, the cutover regions, and the range areas. In every case, its aim was to help rationalize the progress of agricultural settlement and development on these margins of growth.[30]

These same problems were referred to by Gray in a slightly different way in 1926 when he outlined research needs in the field of land economics in a paper before the American Economic Association. Five of the seven topics were (1) land requirements, (2) land classification, (3) forestry economics, (4) grazing, and (5) settlement.[31]

The tremendous about-face in attitudes regarding land and farm production needs after the war had its repercussions all along the line. Reclamation

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[27] L. C. Gray, O. E. Baker, F. J. Marschner, B. O. Weitz, W. R. Chapline, W. Shepard, and R. Zon, "The Utilization of Our Lands for Crops, Pasture, and Forest," U.S.D.A., *Yearbook,* 1923 (Washington, 1924), pp. 415–506.

[28] U. S. Congress, House Committee on Irrigation and Reclamation, *Hearings on Extension of the Time of Payment for Settlers on Government Reclamation Projects,* May 1924 (68th Congress, 1st Session, 1923–1924, Washington, 1924); especially pp. 4–7. Also, U. S. Department of the Interior, Committee of Special Advisors on Reclamation, *Federal Reclamation by Irrigation* (Washington, 1924).

[29] U. S. Congress, House Committee on Agriculture, *Hearings on Reforestation,* March 25–27, 1924 (68th Congress, 1st Session, 1923–1924, Washington, 1924). Also, M. C. Calkins, "The Clarke Forestry Law," *Journal of Land and Public Utility Economics* 1:125–28, (January 1925).

[30] L. C. Gray, *The Division of Land Economics,* U.S.D.A. (Mimeograph), (December 1925), p. 2.

[31] L. C. Gray, "Land Economics as a Field of Research," *American Economic Review, Supplement* 16:289–97, (March 1926).

projects felt pinched under their prewar investment commitments, overextended areas of cultivation in the range area were under pressure, the boomer period in the cutover regions was at an end, and in the older highland sections of the East the trend toward farm abandonment became a subject of renewed concern. In these important adjustments, the states involved were not inactive.

In the cutover areas, which had experienced a landward movement until after the war, it became evident that future demands for land would not be sufficient to put most of these lands into farming uses. A start was made in Michigan to inventory the state's land resources in order that prospective settlers would be better able to select the most promising lands first. This program, instigated by the Michigan Academy of Science, came to be called the Michigan Land Economic Inventory. Previous to the war, direct mapping from field observation of land characteristics had been limited to the work of nature scientists. There had long been work in soil and geologic surveying, topographic mapping, forest cruising, and the like. In the social sciences, however, the only related work had been that of Taylor and Baker, whose work had been with generalized secondary data for large areas, and of Galpin, who had done limited work in mapping certain social characteristics of farmers in place.[32]

The Michigan land economic survey was "a new departure from the stereotyped piecemeal surveys."[33] It was new primarily because several different nature scientists worked as a team, but it also included an economic inventory of data on land tax and ownership. Lovejoy has stated that the work in Michigan bore out the implications of the 1923 *Yearbook* report and of Dr. Ely's advice to the Harding Agricultural Conference of 1922: "The methods and points of view of the land economists at last dominated and superseded the methods and points of view of the technical agriculturalists who, all these years, had permitted confidence in their technical skill, and undue optimism—if not illusion — as to the economic practicabilities of agriculture, to bolster the assumptions, allegations, and subreptions of professional land-boomers."[34] Yet while the Michigan work advertised the name "land economics" and attracted wide attention to land utilization problems of the cutover areas, still it hardly got beyond field mapping of physical phenomena.

With relative prosperity in the cities during the twenties and increasing agricultural difficulties, cutover lands soon became unattractive on the market and a wave of tax delinquency began to sweep the cutover territories of the Lake States. This phenomenon, together with the prevailing belief, as stated in the 1923 report, that timber shortages were likely to be acute, added to the interest in the cutover problems. Consequently, in both Wisconsin and Minnesota, studies were made of the tax delinquency situation in the cutover area, special forestry aid laws were passed, and, by the end of the decade, detailed land economic inventories were initiated.[35] The research work in Wisconsin was under the leadership of B. H. Hibbard. On the national level, a

[32] H. C. Taylor, "The Geographical Method," in "The Place of Economics in Agricultural Education and Research," Wisconsin Agr. Exp. Sta. *Research Bulletin* 16 (Madison, 1911), pp. 113–15; and C. J. Galpin and E. F. Hoag, "Farm Tenancy, An Analysis of the Occupancy of 500 Farms," Wisconsin Agr. Exp. Sta. *Research Bulletin* 44 (Madison, 1919), pp. 300–04.

[33] W. De Vries, "The Michigan Land Economic Survey," *Journal of Farm Economics* 10:516–24, (October 1928); R. A. Smith "The Land Economic Survey in Michigan," *Roosevelt Wild Life Bulletin* 3:683, (October 1926).

[34] P. S. Lovejoy, "Theory and Practice in Land Classification," *Journal of Land and Public Utility Economics* 1:165–66, (April 1925).

[35] "Land Economic Inventory of Northern Wisconsin, Bayfield County," Wisconsin Department of Agriculture and Markets, *Bulletin* 100 (Madison, 1929); W. A. Duffy, A. R. Whitson, and G. S. Wehrwein, "The Land Economic Inventory of Northern Wisconsin, What It Is and What It Can Be Used For," Wisconsin Department of Agriculture, *Bulletin* 97 (Madison, 1929); "Land Economic Survey of Hubbard County, Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 317 (University Farm, St. Paul, 1935).

broad study of forest taxation was authorized under the sponsorship of the U.S. Forest Service.[36]

The trends against agriculture were felt not only in the areas which had been pushed into farming during the war period and the immediately preceding years; in the older areas of the Northeast the historical trend of agricultural recession was accentuated by the same forces that were felt so keenly in the arid and cutover sections. In New York State, for example, farm organization leaders watched the decline in farming in the poorer sections of the state and asked that studies of farm abandonment be undertaken. Following a few spot studies, New York in 1929 passed special legislation for the state purchase and reforestation of rural lands submarginal for agriculture, and two years later authorized an inventory of its rural land resources.[37]

The Division of Land Economics gave some assistance to this work in New York, but it took an even larger responsibility in starting studies of farm abandonment and farm-forest adjustments in areas in Vermont, Pennsylvania, Ohio, Kentucky, and West Virginia.[38]

Land Settlement

The work relating to land settlement in the Bureau of Agricultural Economics included a summary statement of quantity of land in the United States not in farms, and an appraisal, region by region, of its potential value for agricultural purposes.[39] That bulletin was followed by another discussing capital needs and sources of credit in buying a farm in undeveloped regions.[40] These bulletins were not prepared with a view to stimulating a more rapid utilization of new land for farming purposes. The aim was to provide that information which would guide those who were bent on acquiring such land with the hope of developing farm homes. It was recommended that the prospective settler without information and experience work for some successful settler for a year before buying land and undertaking to develop a farm for himself. That advice is given meaning by this statement:

> . . . Hundreds and hundreds of abandoned claims in the dry-farming regions and cut-over areas, and hundreds of applications for time extensions to meet payments on irrigated homesteads give striking evidence of the inability of many settlers to make good. This process may eventually result in getting only the best permanent settlers on the land and in selecting and occupying only the more productive land. Nevertheless, it is a wasteful and expensive practice and is a harsh experience for the settlers who fail. Without doubt, a large percentage of these failures might have been avoided if the land had been classified and if the prospective settler had waited until he had ac-

[36] F. R. Fairchild and Associates, "Forest Taxation in the United States," U.S.D.A., *Miscellaneous Publication* 218 (Washington, 1935).

[37] New York State Reforestation Commission, *Report* (Albany, 1932); A. B. Lewis, "Methods Used in an Economic Study of Land Utilization in Tompkins County, New York, and in Other Similar Studies in New York," Cornell Agr. Exp. Sta. *Memoir* 160 (Ithaca, 1934); F. D. Roosevelt, "Message of the Governor Recommending Survey of the Rural Lands of the State," *New York Legislature*, No. 54 (Albany, 1931); see also, Salter, *Land Economics*, Chap. 6.

[38] L. C. Gray, "Objectives and Methods in the Local Definition of the Extensive Margin in Agriculture," in International Conference of Agricultural Economists, *Proceedings*, 1930, pp. 258–69.

[39] B. Henderson, "Farm Lands Available for Settlement," U.S.D.A., *Farmers' Bulletin* 1271, (Washington, 1922).

[40] B. Henderson, "Buying a Farm in an Undeveloped Region," U.S.D.A., *Farmers' Bulletin* 1385, (Washington, 1924).

cumulated the necessary capital or credit, and had learned something at least of the rudiments of working the land before he invested his all in an untried venture.

A prospective settler, with or without experience in farming, whether he has a large or small amount of capital, will save both time and money for himself and guard himself against loss through mistakes by taking ample time to investigate the country and the agricultural conditions of the region before he acquires a farm in the undeveloped lands of the United States.[41]

Salter commented specifically on the upper Lake States:

In respect to the settlement of cutover lands . . . men in the developing fields of farm management and agricultural economics undertook specific research projects. Out of these efforts has come a long series of research studies, publications, and public action. To the inquiries conducted in these problems, first attention will be given. Furthermore, because of the high degree of attention to these problems in the northern Lakes States and because of the close connection between the history of land economics and the land-grant institutions in this region, a much more thorough review of the reports on the Lakes States cutover region will be given than for reports on other areas or other types of land economics research.

Under the agricultural conditions which prevailed between 1900 and 1920, there was continuing pressure to settle unused lands for agricultural purposes. In the upper Lakes States, the white pine had been removed in the latter decades of the nineteenth century; then the lumbermen went over the area once again to take the hardwoods.

At first, the expectation was that most of this land would be turned into profitable farms. But as early as 1915 it was seen that in spite of generally favorable conditions for farmers in the country as a whole, some settlers in the cutovers were having real difficulty in establishing profitable farms. The most obvious special difficulty was that of removing the stumps from this land; and just as engineers in the respective land-grant colleges worked on land-clearing techniques, so did some farm management workers study the costs of clearing operations. The problem was seen as that of helping the individual settler to determine ways and means of clearing his land inexpensively and quickly.[42]

In a great deal of the research work done in connection with the settlement of the cutover lands, the farm management survey method was used in studying the farms in the area. The information thus obtained was useful in answering questions relating to whether the land should be in farms or forests, or put to other uses. In this class belongs a study published by the University of Minnesota in 1918 under the title "Experiences of Northern Minnesota Settlers."[43] Of that bulletin, Salter said:

That this study also deals with a problematic situation — with doubts as to the outcome of a process of experience over time — is made clear in the report. The situation dealt with is such that the "average settler" is "usually unable . . . to bring a living for his family and to permit him permanently to stay in the region. Many farms have changed hands two, three, and even four

[41] Henderson, "Buying a Farm in an Undeveloped Region," p. 29.
[42] Salter, *A Critical Review of Research in Land Economics*, pp. 83–84.
[43] F. W. Peck, "Experiences of Northern Minnesota Settlers," Minnesota Agr. Exp. Sta. *Bulletin* 180 (University Farm, St. Paul, 1918).

times with only 25 to 30 per cent of the possible agricultural land broken for crop production."[44]

Turning from Minnesota to Wisconsin, Salter said:

The first research publication dealing with the problematic process of cutover settlement prepared by men whose major training was in general economics, as distinguished from those who specialized in farm management, was published in Wisconsin[45] two years after the Minnesota bulletin appeared. By this time, the problem apparently was clearer, for the Wisconsin study is directed at one of the particular factors then considered strategic in the situation: the availability of credit for settlers. Farmers, county agents, bankers, and others reported that lack of capital and credit is a "chief cause of failure." The study is obviously intended to revise and expand a hypothesis that if changes were made in the farm credit arrangements in the cutover area, settlers would be better able to establish profitable farms.

In strong contrast to Minnesota Bulletin 180,[46] the organization, analysis, and presentation of the evidence in this bulletin would very properly be described as informal. There is no attempt whatever to use in any consistent manner any particular sets of evidence; there is not a single table of data in the report or any indication that such tables were assembled; and the only map, one which shows interest rates by counties, is based on "reports of several bankers in each county." In short, the bulletin is an exemplar of the so-called "Wisconsin essay" research report, as Minnesota Bulletin 180 is of the farm management survey.[47]

L. C. Gray, of the Division of Land Economics of the U. S. Department of Agriculture, and J. D. Black (then at Minnesota), entered into a co-operative study of land problems in the cutover areas of the three Lake States, Michigan, Wisconsin, and Minnesota, the results of which were published in 1925.[48] Of that study Salter said:

. . . the activities of land colonization companies received special attention as a strategic factor in the land settlement process.

. . . The specific formulation of the problem for this inquiry follows the conclusion of Minnesota Bulletin 180[49] to the effect that agencies selling land should be regulated and land colonization activities should be further studied. In the opening sentence of . . . [the bulletin by Black and Gray], it is stated that "a settler's success . . . under present conditions . . . depends . . . upon the policies and practices of the land companies and other real estate agencies" which are "more likely to be animated by profit-seeking motives than by consideration of the public interest."

While the objective is specifically given, "to analyze the methods of the different types of land companies and other related agencies," it is clear that such analysis is intended as a way of making explicit a hypothesis that if the activities of the companies which intervene in the land settlement process were regulated, then settlers would achieve success.

To probe this hypothesis, data were secured relative to the experience of 3000 settlers and 153 land companies, real estate dealers, and agents. In

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[44] Salter, *A Critical Review of Research in Land Economics*, pp. 86–87.

[45] R. T. Ely, B. H. Hibbard, and A. B. Cox, "Credit Needs of Settlers in Upper Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 318 (Madison, 1920).

[46] Peck, "Experiences of Northern Minnesota Settlers."

[47] Salter, *A Critical Review of Research in Land Economics*, p. 90.

[48] J. D. Black and L. C. Gray, "Land Settlement and Colonization in the Great Lakes States," U.S.D.A., *Bulletin* 1295 (Washington, 1925).

[49] Peck, "Experiences of Northern Minnesota Settlers."

addition, other items of evidence were obtained from secondary sources such as the census.

The conclusions of the inquiry are given in the final section entitled "Land Settlement from Standpoint of Public Interest." They may be stated as follows: If state or national machinery effectively eliminated purely parasitical types of agencies, if some method were employed to prevent the sale of land not suitable for settlement and to prohibit the sale of good land at "unduly high prices," if competition could be reduced so land companies would not make overattractive but costly inducements to settlers without adequate experience and resources, and if lumbering can be coordinated with settlement, then settlers will establish themselves successfully. . . .

. . . by the time . . . [the bulletin by Black and Gray] was in print, the situation in the cutover region was undergoing marked change. The most obvious indication of the change was a tremendous wave of tax delinquency, which was experienced in the northern counties of the Lakes States. . . .

The University of Wisconsin issued a quick review of the facts in a bulletin issued in 1928.[50] This report . . . is not a problem-solving analysis. It includes the presentation for each of 17 northern counties of secondary figures on over-all land cover, which show that the decrease in marketable timber has swiftly outrun the increase in farm lands. The central body of the report is a quantitative presentation of the status of tax levies in these same counties over the period 1921–1927. Finally, in a section "What Shall Be Done About It?" there is a brief review of the already available instruments (school equalization, forest crop law, authority for county and national forests) that might be used to handle the tax reverted lands and to ease the burden of local public expenditures. Also, the report indicates at several points that an intensive study of the problem in one county is under way; and in fact the only data in this report that are more detailed than county totals are advance figures from that study on the relationship between tax delinquency and land quality and ownership in one town.

The following year, Wisconsin Bulletin 406, the intensive analysis referred to in Bulletin 399, was issued.[51] In terms of a full inquiry, Bulletin 399 must be regarded as a preliminary review of evidence serving the function of problem formulation. The conclusion of the first study is one general suggestion: "One thing above all is clear. It is no longer believed that the settlement and development of cutover lands can properly be left to private enterprise alone . . . some form of public ownership or control is inevitable if good results are to be obtained on a great acreage in the northern counties." This broad statement serves as the beginning hypothesis for Bulletin 406. Recognizing that the "new situation" is "one on which there is no precedent to guide," the aim of this intensive study is to make some "tentative suggestions," which would be on the order of refining the hypothesis that if public land management procedures are followed, then the northern Wisconsin counties will avoid their present difficulties of idle land resources and inadequate public finances.

The conclusions, definitely labelled as suggestive, may be regarded as an elaboration of the "if" clause of the beginning hypothesis. They include the designation of districts that should be used only for forestry and recreation, the encouragement of state or federal forest land purchases in such areas, the encouragement of industrial forestry in such areas under the forest crop law of the state, and the development of county forestry in those areas

[50] B. H. Hibbard, J. Swenehart, W. A. Hartman, and B. W. Allin, "Tax Delinquency in Northern Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 399 (Madison, 1928).

[51] B. H. Hibbard, W. A. Hartman, and W. N. Sparhawk, "Use and Taxation of Land in Lincoln County, Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 406 (Madison, 1929).

through the process of tax reversion. Finally they advise the withdrawal of settlers from such areas by the exchange of tracts owned by the county and located in other districts, by concentrating public expenditures on improvements in such other nonforestry districts and by "something in the nature of zoning." . . .

In 1931 the U. S. Department of Agriculture issued a Bulletin[52] that summarizes all the settlers' records secured in 1919–1920 (some of which had been used in U. S. D. A. Bulletin 1295 [by Black and Gray], issued in 1925). It also contains information obtained from a rapid survey in 1928 of the same areas visited in 1919 and 1920.

The bulletin is offered as one that "describes and presents some of the fundamental conditions affecting the development of this cutover region and summarizes briefly the progress that settlers may expect to make in developing cutover land farms." The specific conclusion of the report is "that until a directed settlement policy based on an economic classification of land is established, the prospective settler can eliminate certain hazards only by exploring all reliable sources of information pertaining to the area in which he is interested, and by weighing the advantages and disadvantages."[53]

In Retrospect

Land tenure research before 1920 grew out of either questions of farm tenant lease contracts or study of the problem of how farm operators achieved ownership of their land. Some of these studies continued for a few years after 1920, but two new lines of interest were also noticeable. The rapid turnover of land during the boom created concern as to the character of the ownership of rented lands; and secondly, land tenure was tied closely into some of the land utilization research, particularly in the farm-ranch areas of the Southwest.

The 1923 *Yearbook,* which carried the landmark report on the nation's land utilization situation, also contained a very comprehensive report on farm ownership and tenancy summarizing all of the findings of the many studies which had already been made.[54] But one must remark that whereas the land utilization report marks the beginning of an intense growth of interest in that subject, the land tenure report is more accurately described as marking the termination of an intensive period of research interest in that subject.

The history of land economics shows it to be a field that has always been close to existent social problems. This characteristic may not be unique, but it is important. In the beginning, it was nature scientists, public officials, and publicists, who gave expression to a growing skepticism regarding the fundamental premises of national policy. They asked whether positive public action were not necessary in order to protect the nation's supply of landed resources and assure widespread ownership of farm land. This great issue attracted the attention of at least one prominent professional social scientist, Richard T. Ely, who recognized its importance and who encouraged many others to give it their attention. The field of land economics has been the result of their work on this problem.

The point of emphasis in the work reviewed has varied with the changing times and with the undulations of public concern. The course of the work

[52] W. A. Hartman and J. D. Black, "Economic Aspects of Land Settlement in the Cutover Region of the Great Lakes States," U.S.D.A., *Circular* 160 (Washington, 1931).

[53] Salter, *A Critical Review of Research in Land Economics,* pp. 95, 98–100, 104–05.

[54] L. C. Gray, C. L. Stewart, H. A. Turner, J. T. Sanders, and W. J. Spillman, "Farm Ownership and Tenancy," U.S.D.A., *Yearbook,* 1923 (Washington, 1924), pp. 507–600.

has also been affected by developments in the application of social science to other kinds of problems and by minds with training in fields other than social science. Yet the record shows that over a period of about fifty years, there has continued to be a core of intellectual interest among a group of social scientists who have directed all or a part of their efforts to current phases of the original challenge of the two premises of national land policy. This work has come to be known as land economics.

The intellectual progenitor of land economics was Richard T. Ely. The leader of rural land economics through most of its history to 1939 was Lewis C. Gray. Other men who played a part in setting its direction are Henry C. Taylor and Benjamin H. Hibbard. Gray, Taylor, and Hibbard were students of Ely, and many others who will later be shown to have affected the course of land economics research were in turn trained by Taylor or Hibbard or Ely. Ely's approach to economic problems was not, for his time, traditional. The field of land economics has thus been influenced by those whose training in economics embodied the correlativity of law and neo-classical economics, the historical development of economic society, and the directing force of public action questions on economic inquiry. Other influences came from W. J. Spillman and George F. Warren, both trained in agricultural sciences, and from the emergent work in farm management, rural sociology, and prices and statistics. . . .

Salter stated in brief that during the first half of the twentieth century the work that came to be known as land economics was directed in the main toward:

1. Problems in the conversion of land from one major use to another general use. (No use to settlement, forestry to settlement, settlement to abandonment, and so on.) These problems, arising out of social changes or social processes, have been looked at by land economists as public rather than private problems.
2. Problems in the attainment of land tenure objectives, whether or not associated with major land use changes. These problems also arise out of social changes, and they have been primarily regarded by land economists as public rather than private problems.[55]

In 1932 the farm land tenure problem was extremely serious. Mortgages were being foreclosed; credit agencies, the land banks, the insurance companies, and vast numbers of smaller agencies, as well as great numbers of individuals, found themselves unwilling landlords who had to find tenants for their farms. It was a time to test old ideas and seek new ones. But land economics in the New Deal is beyond the scope of this book.

[55] Salter, *A Critical Review of Research in Land Economics,* pp. 25, 35–36, 38.

PART SEVEN

FARM LABOR AND FARM WAGES

30.

Farm Wages Reports

FACTS REGARDING THE WAGES of farm labor have been gathered from time to time for more than a century.

1845 — U. S. Commissioner of Patents, Edmund Burke

In the report for 1845 by the Commissioner of Patents, Edmund Burke, four and one half pages were devoted to tables showing the wages of labor on farms and of mechanics from 22 states and the Territory of Iowa.[1] The purpose of gathering that information was not stated. The fact that wages of farm labor and of mechanics were printed in parallel lines immediately adjacent might suggest that the contrast was intended to be emphasized because the wages of mechanics were much higher than the wages of farm laborers. In some instances, the fact was mentioned that the farm laborer received board while the mechanic did not.

Following the tables is a statement taken from the *Mark Lane Express,* of London, showing wage rates in the several countries of western Europe.[2] The figures were converted into purchasing power in terms of bread, meat, butter, cheese, and potatoes. That one purpose of the report was to show the American wage worker how well off he was is indicated by the last three sentences, which read:

> . . . The laborer in this country, who receives his bushel of wheat a day, or other articles in proportion, will readily conceive the meagre fare, and slender chance of "laying by anything," which must attend the foreign agricultural laborer. In all these countries it will be seen the value of provisions is at least as great as here, and in some instances much greater. It is only by the comparisons which such authentic statements enable them to make, that the free laborers, the farmers or mechanics of this country, can fully appreciate the advantages of their position.[3]

1866-1893 — Statistician, U. S. Department of Agriculture, J. S. Dodge

About 20 years later, in 1866, the agricultural statistician, J. R. Dodge, began a series of reports on the wages of farm labor.[4] The

[1] U. S. Commissioner of Patents, *Report,* 1845 (Washington, 1846), pp. 1149–53.
[2] *Report,* 1845, p. 1153.
[3] *Report,* 1845, p. 1154.
[4] U. S. Commissioner of Agriculture, *Report,* 1866 (Washington, 1867), pp. 80–89.

data were obtained by sending an inquiry to the crop correspondents. Results of the inquiry were summarized:

The rate of wages in the several States differs just in proportion to the multiplication of separate industries, modified in new States in process of settlement by the increased demand for consumption occasioned temporarily by in-coming settlers who are as yet non-producers, or in the mining States and Territories by the employment of the majority in mining. The following is a table of average wages per month of farm laborers employed for the year, in the different sections of the country:

Eastern States	$33.30
Middle States	30.07
Western States	28.91
Southern States	16.00
Oregon	35.75
California	45.71

One cause of high rates of labor in this country is the superior intelligence and activity of the laborers. Nowhere else is so much agricultural labor done by machinery requiring skill and knowledge in its management, and accomplishing marvellous results in its swift and efficient action. . . . There is a tendency to a just equilibrium in the labor markets as in all other markets; and if laborers by superior skill and celerity of movement may do double work, they will obtain, other things being equal, a double price. Agricultural machinery has done more in this country than any thing else towards the elevation of labor.[5]

Dodge, too, compared farm wages in the United States with those in England and remarked:

It is believed that such an exhibition of the facts of this great department of human industry will furnish profitable food for reflection and information tending to promote the profits of industry and the welfare of the human race.

The people of Europe, through millions of friends already reaping the fruits of well-remunerated labor here, are now pouring in upon us in larger numbers than ever before; yet there is room enough for all, and prospective plenty and wealth, after meeting the demands of the government, which will decrease in gravity year by year.[6]

All told, J. R. Dodge made nine investigations of the wages of farm labor. They were in the years 1866, 1869, 1875, 1879, 1882, 1885, 1888, 1890, and 1892.[7] In 1892 he summarized the results of those studies:

The most important facts ascertained are those of wages by the month, both with and without board, for the summer season or for the year. In such wages are included a very large proportion of the hired agricultural labor of the country. Of the transient labor employed, the most important is that of the harvest period. This is generally about 40 per cent higher than transient labor employed for other purposes, and higher also than regular monthly wages in nearly the same proportion. There is a great difference in the relative proportion of transient labor in the several geographical divisions of the country. In the South engagements for the year are the

[5] *Report,* 1866, p. 83.
[6] *Report,* 1866, p. 89.
[7] "Wages of Farm Labor in the United States," U. S. Department of Agriculture, Division of Statistics, *Miscellaneous Series Report* 4 (Washington, 1892), pp. 7, 8.

natural and customary rule of labor contracts, and transient labor is only available to a limited extent, and only desirable for excess of cotton-picking or for the trucking and fruit-growing harvest exigencies, which are annually claiming increased importance. On the Atlantic coast market-gardening, orcharding, and berry-picking give increasing prominence to transient rural service. In the wheat-growing regions of the Northwest this class of farm labor assumes the highest importance and dominates the labor situation, as shown in the swelling rates of wages in Minnesota and the Dakotas.

Our methods of obtaining these averages are like those employed in various lines of crop-reporting. Our county boards of observation investigate and fix upon a county average, and these averages are consolidated in this office by applying the rate to the number of local laborers, and so making a true average. Each State agent consolidates the returns of his own correspondents in the same way. The two results are then compared and harmonized. . . .

The average rates by grand divisions of the country, representing "wages without board" per month, laborers boarding themselves, is thus stated for the nine investigations:

Sections	1892	1890	1888	1885	1882	1879	1875	1869	1866
Eastern States. . .	$26.46	$26.64	$26.03	$25.30	$26.55	$21.36	$29.00	$32.03	$33.31
Middle States....	23.83	23.62	23.11	23.19	23.21	20.24	26.99	29.19	29.83
Southern States..	14.86	14.77	14.54	14.27	14.67	12.65	15.28	16.49	16.63
Western States...	22.61	22.01	22.23	22.27	23.26	19.81	23.25	26.39	27.84
Mountain States..	32.16	31.94	33.37	30.24	36.50	.....	.....	.....	27.23
Pacific States....	36.15	34.87	36.73	37.78	37.22	40.11	43.50	46.38	44.60
Average.....	18.60	18.34	18.24	18.06	18.58	16.05	19.49	25.92	26.87

Wages are highest in the Pacific coast States. The Mountain States hold second place. East of the mountains the highest rates are in the Eastern States; in the Middle States about 10 per cent less, and in the Western States there is a further reduction of about 4 per cent. . . .

The wages of farm labor, when board is furnished in addition to the money rate, are as follows:

Districts	1892	1890	1888	1885	1882	1879	1875	1869	1866
Eastern States. . .	$17.50	$17.71	$17.21	$16.70	$16.92	$13.03	$18.59	$20.44	$20.82
Middle States....	15.78	15.61	15.41	15.24	14.71	12.37	16.98	18.37	19.01
Southern States..	10.02	10.10	9.90	9.90	9.92	8.46	9.94	10.55	10.75
Western States...	15.36	15.00	15.09	15.20	15.60	12.75	15.44	17.04	18.48
Mountain States	21.28	20.64	21.99	19.74	27.08	.....	.....	.....	17.61
Pacific States....	24.25	22.50	25.08	24.37	23.73	25.88	28.13	28.69	29.48
Average.....	12.54	12.45	12.36	12.34	12.41	10.43	12.72	16.55	17.45

This table presents a narrower range of differences, as the high rates following the war gradually declined, than the other, in which was included the cost of board, which was proportionately high in those days of abnormal prices. . . .

The difference between wages with and without board, at various dates in the several geographical divisions, affords an opportunity for interesting study. This difference stands practically for the cost of board, and represents variation in prices of products consumed and in the average rations of the several groups. Comparing these equivalents for board in 1892 and 1866 respectively, in a period of average wages and in one of abnormal elevation, the statement is as follows:

Sections	1892	1866	Reduction
			Per cent
Eastern States	$ 8.96	$12.49	28
Middle States	8.05	10.82	26
Southern States	4.84	5.88	18
Western States	7.25	9.36	23
Mountain States	10.88	9.62	Inc. 13
Pacific States	11.90	15.12	21

Two points are at once suggested by these figures — the higher cost of board in the earlier period, and the differences in cost then and now, in the several sections. Then wages were high, products correspondingly dear, and necessarily the cost of board was greater. Then the board allowance was greatest on the Pacific coast, as it is now. East of the mountains it is greatest in the New England States, which bring from the West a considerable proportion of the substantials of their dietary. The Middle States, with more home production and less dependence on the prairies, afford farm board at a somewhat cheaper rate. The West, with cheap food, makes a lower charge for board, but not quite in proportion to cheapness of products, the cost and inconvenience of domestic service being an important factor in the charge. The lower cost in the South is partially due to a practical elimination of domestic service, the laborer usually taking the materials and otherwise furnishing board and bed. . . .

The relative wages of labor of the white and colored race, respectively, can not be precisely given, as no separate returns were made. Only an average of all wages, by the month and by the day, was sought. A very large proportion of those working for wages in agricultural operations in the Southern States may be assumed to be of the colored race, so that the wages of that section may, in a modified sense, stand for the rate of colored labor. The reader will hold this fact in view in the comparison presented. . . .

A careful analysis of all the data collected concerning farm wages from 1840 to 1865, in comparison with results of the more recent investigations, will show that in fifty years the compensation of farm labor has very nearly doubled.[8]

[8] "Wages of Farm Labor," pp. 7–10, 12, 15.

The results of the nine investigations were given by states for monthly wages without board, monthly wages with board, day wages in harvest without board and with board, and day wages for ordinary farm labor without and with board.[9] Dodge included also in that summary a survey of the relative scarcity of farm laborers in the various parts of the United States. Samples from the notes from county correspondents read:

> Main. — *Penobscott*: [Help is] Scarce, as men are mostly in the sawmills or on rivers. . . .
>
> New Hampshire. — *Merrimack*: Plenty of help the past summer, as low water caused many mills to shut down. . . .
>
> Massachusetts. — *Norfolk*: First-class help is scarce, as other industries get the best.[10]

In Ohio the story runs by counties:

> Ohio. — *Putnam*: About the usual number; the greatest demand is in wheat harvest and at corn cutting. *Butler*: A scarcity exists, owing chiefly to farmers' sons seeking work in the cities. *Perry*: Abundant.[11]

The Michigan reports by counties run:

> Michigan. — *Kalamazoo*: Not abundant, owing to the general indisposition for such work. *Branch*: A fair supply. *Huron*: Not very abundant, nearly every man having a small farm of his own. *Kent*: Very scarce, owing to the general preference for cities, manufactories, and street-car service. *Jackson*: Supply deficient, our young men of good habits seeking employment in cities.[12]

And thus runs the story for 28 pages of fine print. Dodge summarized the 28 pages in five.[13] These few random samples indicate the demand for labor in industrial and commercial occupations was a major factor in determining the scarcity or abundance of wage workers on farms. Were farmers not able or simply not willing to compete for labor by paying attractive wages? The year 1892 was a period of low prices for farm products.

J. R. Dodge's final report for the U. S. Department of Agriculture on the wages of farm labor was not, however, his last word on the subject. In 1898, the 57th Congress created an Industrial Commission and J. R. Dodge was selected to prepare their report on American farm labor which was published in 1901.[14] After Dodge's report in 1892, five additional investigations of the wages of farm labor had been made by the Department of Agriculture for the years 1893, 1894, 1895, 1898, and 1899, of which the report to the Industrial Commission took account.[15] The Commission report presented charts comparing

[9] "Wages of Farm Labor," pp. 16–21.
[10] "Wages of Farm Labor," p. 26.
[11] "Wages of Farm Labor," p. 40.
[12] "Wages of Farm Labor," p. 41.
[13] "Wages of Farm Labor," pp. 21–26.
[14] U. S. Industrial Commission on Agriculture, *Report*, 1901 (Washington, 1901), 11:73–145.
[15] *Report*, 1901, p. 137.

the trend of prices of farm products with the trend of farm wages from 1866 to 1899.

Dodge had noted in his report for 1892 that while the prices of farm products had been falling for a decade, wages had not declined. He said:

> While farmers have suffered from low prices of certain products, they have been unable to reduce the rates of wages. It might be supposed that the depression in agriculture, of which so much has been said and written, would be attended with a decline in the rate of compensation paid for labor. This has not taken place. The demand is well sustained. Wages have not declined. Many a farmer complains that labor costs too much, that values of products do not warrant the rates demanded, and yet he must have it and promptly makes the engagement.[16]

Farm wages finally did drop in the middle nineties when the other occupations joined agriculture in the depression. Does that fact imply that the rate of farm wages is largely influenced by the prosperity and hence demand for labor in other occupations?

Commenting on the diagrams, Dodge said:

> . . . In these diagrams the farm wages for 1866, 1869, and 1875 have been reduced to a gold basis. . . .
>
> The diagrams show no close correspondence between farm wages and the prices of farm products, but the depression of 1893 to 1895 is seen to have been followed by a marked increase of farm wages, which in 1899 reached a higher point than in any previous year since 1869 or 1875; and, making allowance for the depreciation of currency in the former period of high wages, a point never before exceeded, so far as monthly wages are concerned, though daily wages were a little higher just after the war than at any subsequent time.[17]

Dodge also gave this statement regarding the position and character of farm labor:

> Does the compensation of the farm laborer equal that in other occupations? In actual money, no; in its superior purchasing power, in perquisites and advantages, yes. This question has been misunderstood and therefore misrepresented. The poor laborer has been pitied because he handles less money than the city laborer. So does the farmer who may handle a few hundred dollars a year but lives in a house that would rent in town for $1,000, keeps a half dozen working and driving horses, and supports his family. This investigation . . . makes it clear that the farm laborer's condition, financial and social, is superior to that of the city laborer of the same grade of intelligence and skill. The evidence is overwhelming and conclusive. This refers to the regular laborers by the season or year, and not to the transient or nondescript class who are only a part of the time farm laborers.
>
> The difference in prices in city and country, the items that constitute the cost of living, which in the city are increased by transportation charges, commissions, and duplicated profits, until sometimes the cost is doubled, is not the only advantage of the farm laborer. If married and working for wages without board a house is usually furnished free of rent, or else the

[16] "Wages of Farm Labor," p. 13.
[17] U. S. Industrial Commission on Agriculture, *Report*, 1901 (Washington, 1901), p. 137.

rent is merely nominal; he has a garden patch, firewood, often pasturage for a cow, and sometimes the cow is furnished, and, in many instances reported, a horse or the use of one. In some instances a quart of milk daily is included, and in nearly all cases fruit of various kinds is available. Life experiences are cited where men have gone to the city and returned to the country after years of trial, in some cases spending in city living a handsome surplus saved as farm laborers and coming back to a possibility of recouping their lost savings. In multitudes of instances the laborer, married or unmarried, has made initial payments on land from his savings, and become a prosperous farmer. Eminent authorities of large observation and experience agree that the larger city wage is more apparent than real; that the economically inclined can live better and save more in the country; that the farm laborer has larger opportunities, a better social position, and chances to become a broader man and a better citizen.

This upper class of rural laborers is now in greater demand than ever before and receives higher pay and appreciation now than in any former time. It gives tone and character to rural service and furnishes an example that must have some incitement to ambition of other classes. It is made up of the native element of the population, or of foreign born of the self-respecting class, mostly from the north of Europe.

There is a class less efficient and desirable, with inferior training in rural occupations, whose rate of compensation is less, and whose condition, from lack of economy and judgment more than deficiencies of compensation, is not so good, and whose lives and aims are not on so high a plane. There are many of this class on farms of the Atlantic slope, north of the fortieth parallel, some of the native element but more of the foreign. This region makes large demand for labor in industrial, commercial, and many other lines, leaving the commoner and ruder forms of rural labor to a class inferior in intelligence and training. They receive good pay but less than the more skilled and reliable in higher agricultural and industrial positions, and many of them are saving money and improving their condition. A high authority in Connecticut reports that he employs this class of labor, not exactly what he would like, yet they give fairly satisfactory service and save on an average $100 per year each. There is a large representation of this class in the Ohio Valley and throughout the central West. The harvest hands of the Northwest, working by the day at $1.50 to $2 and $3 per day, according to ability, are a branch of this class, and yet more various in ability and character. They are a peculiar product of the great wheat-raising districts, moving in crowds from south to north as the grain ripens, and returning to the cities for such casual employment as may be had in winter, or to hibernate, or beg, or go as vagrants to workhouses. They are a very miscellaneous lot, from the reputable to the vicious. There seems to be a fascination for this migratory life which causes the gipsy instinct to crop out in fairly respectable individuals. In hop picking and commercial berry picking the same classes and characteristics appear. It is an unfortunate system, injurious and debasing in many of its influences, but perhaps inseparable from the existence of dominating specialties in certain districts.

Another class of laborers, a large one in a dozen States, is that of the freedmen. Its condition leaves very much to be desired in lines of improvement. It tries the patience and tests the wisdom of the wisest in its management. Its improvement, in the view of many of intelligence and experience, is almost hopeless; yet some of our correspondents, who have had a lifetime of experience with them and know their limitations, hold quite a different view, believe in their possible growth in efficiency and reliability, in economy

of management, in ambition to acquire homes, and the general betterment of their condition.[18]

1866-1909 — U.S.D.A. Reports

In 1912 a bulletin by George K. Holmes summarized the 19 investigations on farm wages that had been made from 1866 to 1909 by the U. S. Department of Agriculture.

In contracts of hiring by the year, with board. . . . The average rate [per month] for the United States in 1866 was $10.09. After some variations downward and upward, the rate reached the figure of $12.32 in 1880 or 1881, after which time the rate steadily rose to $13.29 in 1889 or 1890. The next year for which the rate was ascertained was 1909, when it was found to be $18.05.

Among the geographic divisions of States in 1909 the highest rate of wages per month in hiring by the year, with board, is found in the Western group, where the average was $31.30. Next in order was the North Central division with $22.22; third in order was the North Atlantic States with $20.73; the South Central States had an average of $14.25, and lowest of all was the average of the South Atlantic States, $13.10.[19]

In nine of those investigations of farm wages the yearly and the seasonal contracts were combined in calculating average wages. George K. Holmes summarized the results of those studies:

. . . the average rate of wages per month, with board, in the United States in 1891, or 1892, was $13.48. The amount declined during the severe industrial depression of the nineties [to $12.70 in 1894], after which the average rate reached the figure of $13.90 in 1899, $15.51 in 1902, $18.73 in 1906, and $20.01 in 1909. . . .

The summary of average wage rates for the United States . . . shows that the wages paid in 1909 for outdoor labor of men on farms, with board, were higher than in any of the other 18 years covered by the series of investigations. In 1909 monthly wages paid in hiring by the year exceeded the average for 1866 by 78.9 per cent and the average for 1890 by 35.8 per cent, while in contracts by the season monthly wages in 1909 were 63.9 above those of 1866. The combined averages for yearly and seasonal contracts in 1909 exceeded those of 1892 by 48.4 per cent and showed a gain of 44 per cent over 1899. The daily wages of harvest hands in 1909 exceeded the averages for 1866, 1890, and 1899 by 37.5, 32.4, and 30 per cent, respectively, while the corresponding increases of daily wages paid to farm hands for other work than harvesting were, respectively, 60.9, 43.1, and 37.3 per cent. For every dollar earned, on an average, by a farm laborer in 1866, under contracts which included board, from $1,30 to $1.79 was earned in 1909. . . .

The first systematic investigation of the wage rates of the domestic labor of women on farms was made by this bureau in the general farm-wages investigation of 1902. The investigation was repeated in 1906 and again in 1909. . . .

The wage rate of the domestic labor of women on farms in 1902 was $8.69 per month in hiring by the year; in 1906 it was $10.80; and in 1909 the rate was $10.39. . . .

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[18] *Report*, 1901, pp. 80–81.

[19] G. K. Holmes, "Wages of Farm Labor," U.S.D.A., Bureau of Statistics, *Bulletin* 99 (Washington, 1912), p. 27.

In hiring by the season the wage rates of the domestic labor of women on the farm were higher than in hiring by the year. The monthly rate by the season was $9.71 in 1902; $11.95 in 1906; and $12.02 in 1909.[20]

In speaking of the nineteenth of those reports on farm wages, the statement was made:

> . . . All previous investigations of farm wage rates had been confined to the money rate of wages, and hence had omitted many items of supplementary wages in the form of house rent, firewood, laundry work, and other elements of real wages not incorporated in the money rates.
>
> The scope of this investigation has also been broadened so as to include the cost of living of the farm laborer in comparison with his cost of living as a street-railway employee or in any other occupation in town or city, an important element of the real wages of the farm laborer.
>
> This latest investigation has introduced these essential elements into the examination of the earnings of farm labor with results that establish a favorable comparison of the farm laborer with men in competing occupations with respect to real wages.[21]

From 1910 on, data relating to farm wages were gathered annually. Wage rates were presented in conjunction with figures showing trends in living costs on farms. The index of farm wages, based on the average 1910–14 equals 100, shows that the gold wage index in 1866 was 55. In 1893 the index was 67. In 1894 it was 61, then gradually rose to 97 in 1911. The high point was reached in 1920 when the index was 239, or more than four times the rate at the close of the Civil War. The next low was reached in 1922 when the index fell to 146, after which it rose until 1927 when it reached 170. But with the general depression of the early 1930's, wages fell and the index reached the low figure of 80 in 1933.[22]

The most significant relation indicated by the statistics of farm wages is that between the wages of farm labor and the prosperity of industry and commerce. J. R. Dodge noted that wages did not fall with farm prices in the decade 1882–92, but he failed to bring out the relation of farm wages to industrial prosperity. That relation was stated in 1930 by L. H. Bean:

> . . . *The relative supply of farm labor (and also the level of farm wages) depends to a large extent on the industrial employment situation. The industrial depressions of 1921, 1922, and 1930 increased the number seeking jobs on farms, while the industrial booms of 1920 and 1923 created relative scarcity of farm labor.*[23]

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[20] Holmes, "Wages of Farm Labor," pp. 27, 47, 66.

[21] "Report of Victor Olmsted, Chief of the Bureau of Statistics," U.S.D.A., *Annual Report,* 1910 (Washington, 1911), p. 701.

[22] U.S.D.A., *Yearbooks,* 1925, p. 1346; and 1934, p. 709 (Washington, 1926 and 1934).

[23] L. H. Bean, "Post-War Interrelations Between Agriculture and Business," International Conference of Agricultural Economists, *Proceedings,* 1930 (Menasha, Wisconsin: George Banta Publishing Company, 1930), p. 192. For further discussion by the same author of the forces influencing farm wages, see "Supply and Wages of Farm and Industrial Labor," U.S.D.A., *Crops and Markets,* Vol. 3, *Supplement* 4, p. 132 (April 1926); "Population Movements Reflect Farm and Business Conditions," U.S.D.A., *Yearbook,* 1930 (Washington, 1930), pp. 412–15. And of course other discussions have appeared since 1932.

The U. S. Bureau of the Census made a series of efforts to gather data on expenditures of farmers for hired labor but did not obtain adequate information for calculating average wage rates by counties or states. The census did obtain data on the numbers of wage workers on farms. In 1910 the number was 2,895,099; in 1920, 2,336,009; in 1930, 2,732,972.[24] These figures indicate that of the six million farmers, fewer than half of them had hired help at any given time.

[24] See U. S. Bureau of the Census, 15th Census, 1930, *Population* (Washington, 1933), 4:7.

31.

Contributions and Studies by State Agencies

THE CAMPAIGN FOR EXPANDING agricultural production following the entrance of the United States into World War I (1914–18) stimulated interest in farm wage workers and methods of recruiting workers and distributing them in the areas where most needed. As a result new work on the subject of farm labor was started in several states.

New Jersey

In 1917 Alva Agee and Frank App, of New Jersey, issued a bulletin in which they gave the reasons for farm labor shortage, suggested sources from which to recruit the needed supply, and methods of recruiting the workers.[1] The authors presented the idea that nonessential work should give way to essential work:

> . . . In times of prosperous peace millions of workers are engaged in the production of articles that supply no vital want of a people engaged in a gigantic struggle. A little later these workers will awaken to the fact that they are not making their lives count in this crisis and they will want to contribute their share, but our country needs their work now. The shortage of labor for the production of food, ships, munitions and other necessary things is due only to the failure of these workers to realize that labor devoted to things not essential is worse than wasted to-day. . . .
>
> The farmers of this country are in a position to render a service of immense magnitude through the assertion of their power as citizens. There are important influences at work to prevent Congress from placing a ban upon the production of luxuries, and it rests upon the individual farmers throughout every state of our Union to bring such influences to bear upon their members of Congress that a supply of labor adequate to the production of all necessities should be provided, without any delay, by a national enactment, placing a ban upon the production of a sufficient number of luxuries to release immediately one million workers. This will be a blessing to the workers because they will turn to labor of which they may be proud when

[1] Alva Agee and Frank App, "Farm Labor," New Jersey State Agricultural College, *Extension Bulletin* 1(18) (New Brunswick, 1917).

the war is won, and it will enable us to provide food and everything else necessary to the war.[2]

Kansas

The Kansas State Board of Agriculture *Biennial Report* for the years 1919 and 1920 contains a paper by E. L. Rhoades, of the Kansas State Agricultural College, on harvest labor in Kansas.[3]

. . . Investigation by the State Board of Agriculture showed that in the north-central section of the state 3.95 man hours were required per acre for harvesting, compared with 4.6 man hours required for preparing and seeding; in the south-central section harvesting requires 3.31 man hours, preparation and seeding 4.2 hours. The tremendous expenditure of labor in this brief harvesting period, which involves several million acres of wheat in a small district, has created in Kansas the most outstanding transient labor problem known in the world. There is in no other state, nation or industry a comparable demand for so great a number of men to be used for such a short period and to be so accurately scheduled in the time of their arrival and the time of their departure.

Kansas has been producing annually in recent years from nine to over eleven million acres of wheat. This requires the assistance of many thousands of harvest hands from outside the state. Accurate determination of the exact number of men used has been impossible. The most conservative men handling the movement of harvest labor estimate a minimum of 20,000 men per year from outside the state. Most estimates approach twice that number, and for exceptional years like 1919 the number might more nearly approximate 100,000.

A slight increase in wheat acreage makes a tremendous increase in the number of men that must be imported. Each fifty acres increase above normal acreage requires the importation of one additional man; each million acres increase requires the importation of 20,000 additional men. It is customary in a few of our leading wheat counties for the working male population of the county to be more than doubled during the harvesting period. . . .

War demands for increased wheat production, with a greatly decreased labor supply, made the years of 1918 and 1919 the most difficult labor years the state has ever seen. Industrial conditions and high labor wages in the city carried the labor shortage into 1920, presenting a problem almost as serious as that of the previous year. . . .

Improved machinery is helping relieve this labor shortage. . . . The standing grain thresher, which cuts and threshes the wheat at one operation, has gained rapidly in favor during the years of 1919 and 1920. During the latter year approximately 1,500 were operated in the state, each with an approximate saving of three men. . . .

There is no state in the Union that does not contribute some help to the Kansas harvest. . . .

Classes of Help

1. Farmers and farm laborers from eastern Kansas, southern Missouri, and Arkansas constitute not only the greatest class of laborers, but are generally considered the best help.
2. Ranking next in numbers are the itinerant laborers with a more or less definite route and program. . . .

[2] "Farm Labor," pp. 3–4.

[3] E. L. Rhoades, "Harvest Labor," Kansas State Board of Agriculture, *Biennial Report*, 1919–1920 (Topeka, 1921), pp. 204–15.

3. Many city laborers take their vacation during the harvest period or leave their work in the city for a fresh-air job with the farmer. . . .
4. The homesteaders from Colorado, many of whom drive over in cars, are very valuable in the western part of the wheat belt, and in numbers probably rank next after the city laborer.
5. There is always a sprinkling of "drifters" with no definite program and little ambition. . . .
6. College students on vacation constitute the smallest class. In fact, the few of them hardly need mentioning as a separate class were it not for the popular impression that there are great numbers of them. . . .

In 1920 appropriations were made available to the state department of labor in Kansas for maintaining five permanent labor bureaus and three temporary harvest-labor bureaus in the principal railroad centers of the state. . . .

County agents have been the most active local units in the distribution of harvest help.[4]

New York

In the fall of 1919 Roy L. Gillett, then a graduate student and instructor in agricultural economics at Cornell University, began a study of farm labor. The work was done under the supervision of George F. Warren and W. I. Myers. The survey method of gathering facts from the farmers was used. One hundred and ninety-nine farmers were studied. Gillett later became assistant statistician in the Department of Farms and Markets in New York State. His study was published in 1924 by that agency.[5] Some of the findings were summarized:

A large proportion of the hired laborers were local persons, many being members of neighboring farm families.

The increased amount of work to be done in the summer time was accomplished, not only by an increase in the number of persons working, but also by working longer days.

The exchange of work between farmers is an important way of obtaining extra help, particularly for threshing, filling silo, baling hay, and haying and harvest work. . . .

Wages of hired labor are paid in cash, usually with the addition of privileges such as board or house rent and farm produce. There were wide variations in wages. When all hired men were considered together, hourly rates were about the same in summer as in winter. Month men received less per hour in summer than in winter, due to the greater number of hours worked per day. Day men received more per hour in the summer than in the winter because of higher wages paid.

Under conditions that prevail here, farm tenancy is intimately connected with the farm labor question. Farmers often adjust their business to their labor supply by working additional land, or by renting out part of their farm. In some cases, the relation between landlord and tenant is similar to the relation between employer and employee. . . .

Over two-thirds of the farm operators were the sons of farmers. Most of them had had considerable farming experience before beginning to operate

[4] "Harvest Labor," pp. 204–09, 211.

[5] R. L. Gillett, "A Study of Farm Labor in Seneca County, New York," New York State Department of Farms and Markets, *Agricultural Bulletin* 164 (Albany, 1924).

a farm. Many boys who left the farm to work in non-agricultural occupations came back in a few years.

Over 80 per cent of the operators, and over 50 per cent of their fathers, were born in this region.[6]

Wisconsin

The Wisconsin Agricultural Experiment Station issued a bulletin on farm labor in 1920, based upon data gathered in 1918.

Only one-fifth of the work on Wisconsin farms is done by hired labor working out. The supply of farm labor has been increasing, but the demand has been increasing still faster, principally because of livestock farming. Farmers were using 40 per cent more hired labor in 1910 than in 1880.[7]

Seventy per cent of the hired men in Wisconsin were sons of farmers. The bulletin was intended to help farmers work out their hired help problem more satisfactorily. Whether or not to hire, and how much labor to hire, were discussed from the standpoint of the capacity and efficiency of the farmer as a manager. The qualities of hired help were reviewed under the subjects of health and strength, skills, knowledge, the work habit, and nine other topics relating to the workman's usefulness and his moral fiber. The problems of how, when, and where to find help were presented in the light of the experience of many farmers interviewed by the authors and in the light of their own experience as farmers and as state and federal labor agents in 1918. Wage rates and prices of farm products were compared, showing that prices rose more rapidly than farm wages during the war years of 1916 to 1918. Attention was given to the legal, the ethical, and the psychological aspects of the relations of the farmer and his hired help. The fact of seasonal employment was dwelt upon:

On 260 farms in Wisconsin in 1917, there were 263 men hired by the year, 214 for the season only, usually from April to November or December, and 230 more employed for day work or for a month or two in haying, harvesting, and silo-filling. The labor force on these 260 farms by months, counting in the farmer and his family at 320 is . . . irregular, even when the farmer is counted in, but if we consider it from the point of view of the hired man, it is decidedly so. . . . 444 of the 707 farm hands must find other work during a part of the year, 214 of them for the winter months, and 230 for all but a month or two in the rush of haying and harvesting. For those who work on farms for the crop season, favorite winter occupations are: logging, saw-mill work, factory and shop work, paper-mill work, chopping wood, ice-cutting, clearing land, mining, quarrying, hay-pressing, and tobacco-stripping and sorting. The lumber camps and sawmills draw from the northern half of the state, the zinc mines in the southwestern counties, and the factories in the rest of the state. Many farmers' sons still go home to their folks and loaf for the winter.[8]

[6] "Farm Labor in Seneca County," pp. 68–69.
[7] H. C. Taylor and J. D. Black, "Farm Labor in Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 316 (Madison, 1920), p. 2.
[8] "Farm Labor in Wisconsin," pp. 37–38.

Emphasis was laid upon taking thought as to the ways of distributing the demand for labor throughout the year, and dairy farming was suggested as supplying yearlong work.

A final section was devoted to the hired man's chances of getting ahead financially:

> . . . So far as actual earnings and savings are concerned, however, the young man on the farm has a better chance than most city young men. . . .
> . . . the real outlook and chance in life for hired men is not as hired men, but as farm owners. It is the prospect of owning a farm which in the past has made farm hands willing to work longer hours than city workers. What about these prospects at the present time? . . . there were 94 more farm laborers in 1910 than in 1880 in each 1,000 farm workers, 25 more tenants, and 119 fewer owners. Fewer laborers are getting to be tenants and fewer tenants to be owners. . . .
> There are three reasons why it is becoming harder for farmers to climb the ladder to ownership: first, hired men do not save as well as they did; second, land values have risen faster than wages; and third, the amount and cost of the equipment and livestock needed by a tenant has increased more than wages.[9]

Thus the rising standards of living and the increased cost of a farm and its equipment slow down the progress in climbing the agricultural ladder. Cases were not noted where young men deliberately started out to be farm wage hands all their lives.

Minnesota

In 1922 the Minnesota Agricultural Experiment Station issued a bulletin by C. L. Holmes on wages of farm labor,[10] which discussed the subject from many angles. Conditions which determined the farmer's ability to pay and outside conditions which affected the supply of farm laborers at wages the farmers were able or willing to pay received attention.

> One of the things attempted in this bulletin is to determine what may be called the level of wages for farm labor in different sections of the state and at different seasons. This introduces the idea of a "wage level," which probably needs to be explained. The level of wages for labor, like the level of prices for wheat, grows out of supply and demand. The only real demand for farm labor comes from those farmers who stand ready to pay a given known wage; and the only real supply is made up of the labor of men who, in view of all their other opportunities for employment, stand ready to accept farm work at a given wage. The wage level of any given season is the result of a balancing of what employers will pay and what the men will take. Both the wages offered by the farmers and the wages asked by the men affect this balancing point. There are marked differences between farmers as to how high a wage they can safely pay. These differences are due mainly to the relative business ability of the farmers and to differences in the type of farming. Similarly, there are differences in the minimum wage of the various

[9] "Farm Labor in Wisconsin," pp. 45–47.
[10] C. L. Holmes, "Wages of Farm Labor," Minnesota Agr. Exp. Sta., *Technical Bulletin* 4 (University Farm, St. Paul, 1922).

farm laborers because not all laborers have equal opportunity and equal ability to take up other lines of occupation. . . .

. . . There are many different kinds of work for which men are hired and many different grades of men seeking work, and these differences make for variations in wages. Further, the farmers seeking to hire men and the men looking for jobs do not all get together at one bargaining place as do the buyers and sellers of produce in a market. Hence, competition in the labor market has less chance to reduce all wage bargains to a common level than is true in the buying and selling of goods. . . .[11]

If farmers bid strongly enough for laborers to draw them from other lines of employment, the labor "shortage" in farming disappears. A shortage in an industry such as agriculture really means, therefore, that employers in that industry are unwilling or unable to pay enough wages to get the help needed to develop their business as fully as they would like. It will usually be the less efficient employers who have to go without labor. That such a condition as this existed to a degree in agriculture for several years prior to 1921 is indicated. . . .

Two conditions doubtless contributed to the so-called shortage of farm labor. The first of these was the unusual profits in certain manufacturing businesses during the war and just afterward, which have made possible the payment of unusually high wages, thus creating unusual competition for the farmer's labor supply. The second of these was the general scarcity of labor. The hasty mobilization of an army of more than four million men produced a temporary acute shortage. . . . The unsettled condition of the demobilized men, and to some extent of all the laboring population, which came as a result of the war, was probably a more important reason for the shortage. But the most important of all the war's effects on the supply of labor, was its effect on the rate of immigration. . . .

. . . For the five fiscal years prior to the European war [1914–18], net immigration averaged 746,369. Assuming that half the immigrants are potential wage earners, this would mean 373,185 wage earners per year. This number is 41 per cent of the average annual increase in the income-earning portion of our population.

In the fiscal year 1915, the first year of the war, net immigration fell to 122,626, thus supplying less than 7 per cent of this normal yearly increase. In the fiscal year 1918, the first year of our participation in the war, net immigration fell to 16,033, furnishing on the basis of our assumption, only 8,000 workers, or less than one per cent of the normal annual increase in bread winners. . . .

The farm labor shortage of 1918 and 1919, however, was due as much to the shifting of men from agriculture to other industries as to the general labor shortage. The other industries were short of labor because of their great expansion. Some of this expansion preceded, but more of it followed our entrance into the war. Ship-building, camp construction, and numerous other lines of activity carried on under government contract, also added greatly to the non-agricultural demand for workers. The relaxation following the armistice set off a period of extravagant spending, which gave a still further boom to manufacturing. . . .

The most important factor in the relative attractiveness of employment in different industries is the wage rate.[12]

Holmes recognized that the price of farm products is an important factor in determining the farmer's ability to pay wages. He also

[11] "Wages of Farm Labor," pp. 16–17.
[12] "Wages of Farm Labor," pp. 49–51.

pointed out that to arrive at the farmer's ability to pay, receipts and expenses must be compared; that yields as well as prices are factors in determining receipts.

Holmes integrated the principles of farm economics and general economics to a degree that had been unusual in other writings on the subject of the wages of farm labor. A brief paragraph is quoted:

> . . . Things purchased by the farmer include both the things he and his family use directly, as clothing, food, and household furniture, and also the things he buys for use in farming, as feed, seed, fertilizer, machinery, and building material. It will be noted that between 1915 and 1919 the average price of these things increased only 88.7 per cent, and the wages of labor, another important item of expenditure for the farmer, increased only 97.1 per cent, while the price of the two main classes of the things he sells, namely, livestock and crops, advanced 103.7 and 114.6 per cent, respectively. This gain in the prices of farmers' products over the prices of the things for which he spends his money indicates a widened margin of receipts over expenses and consequently larger profits during these five years. To be sure, smaller crops or increased purchases might have kept farmers from realizing these higher profits; but statistics show that while in certain years and in certain localities yields have been low, for the country as a whole production increased rather than diminished during the five years in question. On the other hand, the table shows that in 1920 the percentage figures representing the farmer's expenditures had risen very markedly above the figures for 1919, while those representing his receipts had suffered a sharp decline.[13]

Ohio

In 1925 and 1926 J. I. Falconer, of Ohio, published index numbers of production, wages, and prices.[14] In the first issue of the series, Falconer said: "Farm wages have advanced less than city wages and it has been this which makes farm labor hard to secure."[15] The bimonthly statements on prices, wages, and purchasing power were a part of the outlook information issued to the farmers of Ohio and were not issued as the product of original research.

California

In 1918 R. L. Adams and T. R. Kelly issued a circular on farm labor in California.[16] The authors went a step farther than Agee and App and divided lines of agricultural production into essential and nonessential. "Beef, wheat, beans, sugar, cotton, hay and forage crops, wool, dairy and poultry products, certain fruits and some vegetables are war essentials. Watermelons, hops, asparagus, strawberries, cantaloupes, and similar crops are not classed as essentials."[17] The bulletin is devoted largely to methods of mobilizing the needed supply of labor.

[13] "Wages of Farm Labor," pp. 58–59.

[14] J. I. Falconer, "Index Numbers of Production, Wages, and Prices," Ohio Agr. Exp. Sta., *Bimonthly Bulletin* 10:102–04, 157–58, 190 (July-December 1925), 11:38–39, 86–87, 127, 158–59, 203–04, 254 (January-December 1926).

[15] "Index Numbers," 10:103.

[16] R. L. Adams and T. R. Kelly, "A Study of Farm Labor in California," California Agr. Exp. Sta. *Circular* 193 (Berkeley, 1918).

[17] "Farm Labor in California," p. 4.

From 1928 to 1932 the University of California published seven monographs on Mexican labor in the United States, by Paul S. Taylor.[18] Three of the monographs were descriptive of Mexican labor in agricultural regions. Three regions were studied: The Imperial Valley of California; Valley of the South Platte in Colorado; and Dimmit County, Winter Garden District of South Texas.

In these three monographs are presented analytical expositions, both historical and contemporary, of the contact of American populations with Mexican laborers in social and economic environments of varying types. Not only do environments and American populations vary, but the Mexican populations of each area are fed largely by streams from different sources of emigration in Mexico; they are parts of different flows of seasonal migrations within the United States, and they comprise varying proportions of the resident populations of each area, ranging from about 6 per cent in northeastern Colorado to over 35 per cent in Imperial Valley, California, and over 70 per cent in Dimmit County, Texas.

Imperial Valley, California, leads the United States in production of cantaloupes, and has extensive acreages of lettuce and cotton. A large part of its Mexican population leaves home in the spring and early summer, moving from the border northward by train, stage, or automobile across the Tehachapi ridge, to harvest the deciduous fruits, grapes, and cotton of the Valley of California. In the fall the Mexicans return southward for the winter lettuce harvest in Imperial Valley.

The leading sugar beet growing area in the United States is the Valley of the South Platte River in northeastern Colorado. To this region, as to others in the Middle West from Montana to Michigan, Mexican families are transported each spring at the time for thinning sugar beet plants; in the fall at the conclusion of the harvest they return to the places whence they came, go to northern cities, or remain in the towns and on the farms of the valley. Many of the laborers come originally from Mexico by way of Texas; many others, largely Spanish Americans, come from southern Colorado and New Mexico.

Dimmit County, lying in the Winter Garden district of South Texas, leads the United States in production of Bermuda onions, and raises large acreages of spinach. The Mexicans, both native and foreign-born, transplant and harvest the onion crop by hand between November and May; during the remaining months of the year a large proportion of them join the migration of cottonpickers who assemble near Corpus Christi on the Gulf of Mexico, and follow the opening cotton northward to Fort Worth and westward across the plains of West Texas. In November and December they return to their homes in the Winter Garden.[19]

[18] P. S. Taylor, "Mexican Labor in the United States," University of California *Publications in Economics*, Vols. 6 and 7 (Berkeley: University of California Press, 1928–32).

[19] P. S. Taylor, "Mexican Labor in the United States," University of California *Publications in Economics* (Berkeley: University of California Press, 1931), 7(1):i–ii.

32.
Farm Labor Studies by the U. S. Department of Agriculture

When Secretary of Agriculture D. F. Houston set up a committee in January 1919, to work out plans for the reorganization of the Office of Farm Management in the U. S. Department of Agriculture, farm labor was not overlooked. Proposed research was outlined under seven fields, of which farm labor was subdivided as follows: "*Farm Labor* — (*a*) Supply and movement, (*b*) trend of population, (*c*) living and housing problems, (*d*) creating new productive enterprises for farm labor, (*e*) standards of supervision and compensation for farm labor."[1]

The report carried no explanatory text on the subject, but that was not peculiar to farm labor. Major attention in the report was given to cost of production, and the seven groups in the outline were presented practically without elaboration. There was this difference, however. When the reorganization of the Office of Farm Management got under way, a division was formed for each of the other six fields of research and a leader was appointed to head up the work, but farm labor was not so treated. The study of farm labor was placed in the Division of Land Economics. The center of interest was the farmer and his labor income. Hired farm labor was an item of cost to the farmer and received attention in the cost accounting work from that angle.

Massachusetts

A study was made of farm labor in Massachusetts in 1921.[2] Material was gathered in part by correspondence and in part by personal interviews. In both methods, two questionnaires were used,

[1] "Report of Committee Appointed by the Secretary of Agriculture To Consider Plan of Organization, Scope of Work, and Projects for the Office of Farm Management, and Methods of Procedure in Making Cost of Production Studies," U. S. D. A., Office of the Secretary, *Circular* 132 (Washington, 1919), p. 7.

[2] J. C. Folsom, "Farm Labor in Massachusetts, 1921," U.S.D.A., *Bulletin* 1220 (Washington, 1924).

one for employers and the other for employees. The correspondence covered all types of farms in all parts of the state. The personal canvass was largely restricted to districts where special types of production predominated, such as strawberries, cranberries, apples, market gardening, dairying, tobacco, or onion growing.

The information obtained covered many characteristics of the workers, such as nationality, residence, age, dependents, education, and occupational history. Wages, requisites, and living accommodations were studied, and workers were interviewed regarding their savings and their future plans.

> . . . Two out of five had no savings whatever. One worker in 3 had a bank account, and almost 1 in 4 held title to real estate. One real-estate owner in 5 owned a farm. Nearly half the laborers interviewed had one form of savings and just over one-fifth had two forms; none had more.
>
> Three-fifths of the farm workers intended to stay in agricultural work. One worker in 10 hoped to become a farm owner; a few already owned or rented farm land. The desire to acquire farm land was noted more among the American born. . . .
>
> Somewhat over 10 per cent of the workers intended to leave farm work; over half of these were waiting a chance to resume former occupations. The tendency to leave agriculture seemed stronger among the native born and the younger than among the foreign born and older.
>
> Those workers who had savings or property had distinctly the more definite aims in life. Three-quarters of them were planning to stay in agricultural work.
>
> Almost a quarter of farm workers had no plans. The job offering the most money would attract most of them to it. They were more likely to be single than married. . . .
>
> A third of the farm laborers interviewed had schooling equivalent to less than five grades of grammar school; another third had from five to nine grades. The foreign born had decidedly less education than the native born. One-seventh of the laborers interviewed were illiterate and practically all of those were foreign born. . . .
>
> There is little migration of agricultural labor from one part of the State to another. In general there is somewhat of an annual swing of workers from agricultural to industrial employment, most marked in the Connecticut Valley, where tobacco-sorting shops furnish winter work.[3]
>
> The social standing of farm laborers depends largely upon themselves in Massachusetts. Transient laborers make little place for themselves, except as workers in the temporary jobs for which they come. Nationality, especially of newly arrived immigrants, and color serve to set newcomers apart somewhat; but above all habits, industriousness, responsibility, and character of the workers establish the position of an individual or a race among Massachusetts farmers. The foreign-born farm operators scattered over Massachusetts are likely to hire farm hands of their own nationality, often friends, and seldom do they consider their employees as other than respectable.[4]

New Jersey

The next year the same author made the same kind of a study of truck farm labor in New Jersey. By personal canvass "Information

[3] "Farm Labor in Massachusetts," pp. 22, 24.
[4] "Farm Labor in Massachusetts," p. 22.

was gathered and tabulated for general, truck, dairy, potato, and fruit (orchard) farms."[5] The report shows the seasonal character of the demand for workers. A sample of the information is:

Migratory farm labor in New Jersey seems to be found mostly east and south of Trenton. Italian families from Philadelphia form the majority of migrants east and south of that city; they are employed largely on truck and berry farms, where there is much work within the strength and ability of women and children. These families migrate to farms in time for asparagus cutting or strawberry picking in the spring and stay in the country often as late as October, the end of the cranberry harvest. Economic necessity compels all members from young to old to work if possible. . . . Some families spend up to several months in a locality, according to the labor demand; others move from one place to another during the season. Because the work in which they engage is largely piecework, their earnings depend much upon weather and crop conditions. Families are often paid as a unit. Estimates of their earnings per season run up over $1,000. Housing for Italian families working on the farms is usually meager, yet, poor as it is, some Philadelphia relief workers consider it decidedly more healthful and desirable in summer than the city homes of these families.

The season's farm work over, the Italians return to their city tenement districts. Prominent among their winter occupations are common labor and home work taken in from factories. Some Italian families seem to do little work winters, partly because many find our winter climate very trying.

The Italians seem to be usually thrifty and saving. Many have saved money and some have bought their homes. Some families can live all winter upon the summer's earnings. Others that have not been fortunate borrow from friends and at the end of the next summer pay their debts, often only to repeat what amounts to an annual financial cycle. Some poor families, particularly those in which the husband and father can not earn sufficient for support, are forced to appeal to charities during the winter. . . .

At the time of interview one-third of the workers had been on their jobs not over a month, one-half not over two months, and three-fourths not over six months. Practically one-fifth of the workers had been with the same employer over a year, and 27 of the 677 reporting on this point had been with their employers 10 or more years, including one for 40 and another for 61 years.

Three-fourths of the farm workers had been engaged for the season or year and expected to be kept by their employers until October or later; one-fifth had been hired for only a short time or the duration of certain work.[6]

Much of the information in the bulletin is of a social and educational nature:

Farm workers were asked whether or not they could speak, read, and write in English, and, if foreign born, in their mother tongue. Only 4.8 per cent of the American born were unable to read and write English, as compared with 55.9 per cent of the foreign born who could not read or write the language, including 7 per cent who could not speak it. . . .

Many families of migratory farm workers leave the cities, especially Philadelphia, for truck-farm work in New Jersey in May at about the time strawberry picking begins, or even earlier. Need for the children's earnings, as well as the fact that the parents are leaving home, compels most of them

[5] J. C. Folsom, "Truck-Farm Labor in New Jersey, 1922," U.S.D.A., *Bulletin* 1285 (Washington, 1925), p. 2.

[6] "Truck-Farm Labor," pp. 8–9, 13.

to take their children with them. Whether or not the children begin work at once, they are taken from school and may not be able to return until after the cranberry harvest in October or later.[7]

Farm Labor Costs

In a paper published in 1929,[8] Josiah C. Folsom stated in brief form general conclusions at which he had arrived as the result of several years of study of the farm labor problem. A few excerpts present his thinking at that time:

> One-time farm workers can now leave agriculture for other occupations far more easily than in earlier years. Supply of farm labor in this country varies distinctly inversely to industrial activity. . . .
>
> Following the beginning of the World War [I], farm wages in this country rose from an index point of 101 in 1914 to 239 in 1920, receded to 146, and rose to 170 in 1927. In the same time, the general wage level climbed from 100 to 222, slumped to only 197, and since has more than regained its loss. This fact explains in part the powerful attraction of non-agricultural wages to dissatisfied farm workers. . . .
>
> . . . people leaving the farms seek shorter hours, more agreeable tasks and working conditions, steadier employment, enlarged opportunities for social life, better facilities in housing. . . .
>
> The "old-time hired man" — the man who would work from sun to sun for a small wage, who labored mostly with his muscle, who used at most what now seems meagre equipment and few tools — that man is gone in most parts of the country. A man now must work more with his head to handle modern farm equipment and to practice modern production methods. He is required more and more to exercise judgment and skill. He deserves higher pay and better working conditions than did the old-time farm hand.
>
> Relief for farmers from the high cost of farm labor is probably to be brought about, not so much by reduction of wage bills as by reduction of cost per unit of production by increased efficiency of labor. The program must conform fairly well to the current economic situation to have chance of success.[9]

Another study in which J. C. Folsom co-operated with J. D. Black and others had to do with research in this phase of agricultural economics.[10] That report discusses the farm labor problem and gives a selected bibliography. It was intended as a starting point for further research work in the field.

The discussion of farm labor by the agricultural economists, as related to wages as an item in cost of production and the efficient use of farm labor, is found under the sections on cost of production and farm organization. The prospect of the wage worker on the farm becoming a farmer on his own account is considered under land economics. With the slowing down of progress up the agricultural ladder, more and more attention will doubtless be given to the improvement of the status of the farm wage worker.

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[7] "Truck-Farm Labor," pp. 16, 19.

[8] J. C. Folsom, "Relief From Farm Labor Costs," American Academy of Political and Social Science, *Annals* 142:196–201, (March 1929).

[9] "Relief From Farm Labor Costs," pp. 196, 198, 201.

[10] J. D. Black, ed., "Research in Farm Labor — Scope and Method," Social Science Research Council, Advisory Committee on Social and Economic Research in Agriculture, *Bulletin* 16 (New York: pub. by the Council, 1933).

Transient Labor in the Wheat Belt

Those descriptive reports prepared by Folsom provide a useful background in terms of which to think of the problems of the farm laborer.

Arrangements were made in 1921 by the Office of Farm Management and Farm Economics for the temporary collaboration of D. D. Lescohier, of the University of Wisconsin, in making a study of harvest labor problems in the Wheat Belt.[11]

> Most of the information . . . was obtained by field agents . . . who interviewed nearly 3,000 harvest hands, many farmers, county agricultural agents, employment officials, chamber of commerce secretaries, bankers, merchants, and other citizens in the harvest area of Oklahoma, Kansas, Nebraska, Iowa, and the Dakotas.
>
> The investigation was confined to the wheat area of the central part of the American continent, the so-called Big Wheat Belt, extending from northern Texas on the south to Manitoba and Saskatchewan on the north, and, in irregular contour, from the Mississippi River on the east to the arid belt which runs south from eastern Montana to New Mexico. There are two principal wheat-producing areas, the winter-wheat area, centering in Kansas, and the spring-wheat area, centering in North Dakota.[12]
>
> The small-grain harvest of the area lying between the Mississippi River and the arid districts east of the Rocky Mountains, from Texas to the Canadian border, is one of the most dramatic episodes in the economic life of the United States. Each year it calls more than 100,000 men from various parts of the country to aid in harvesting, thrashing, and storing or shipping nearly 450,000,000 bushels of wheat and 600,000,000 bushels of other small grains. . . .[13]
>
> Farming is essentially a seasonal industry, and small-grain cultivation is one of the most seasonal forms of farming. At seeding time extra help is needed for preparing the soil and sowing, and in the summer a crew of men for harvesting and thrashing is necessary. During the remainder of the year, however, the farmer and his family, with perhaps a hired man, do the work on the representative grain-belt farm. The harvest labor force is several times as large as the force at work during most of the year. This, essentially, is the cause of the great movement of labor into the southern grain belt in June and July and into the northern area in August and September. Thus an industry which needs only a comparatively small amount of labor during most of the year suddenly requires an army of men to handle its peak load.
>
> A surprising number of transient laborers secure work of less than a week's duration. It was found that on an average men spent 26 days in the harvest area, working 15 days and losing 11 days.
>
> A few of the men had fairly steady employment. Three farm boys from Ohio, who reached the Oklahoma fields on June 16, obtained 12 days' work in Oklahoma, 35 in Kansas, 10 in Nebraska, and 4 in South Dakota, between June 16 and August 26, when they were looking for thrashing work at Minot, N. Dak. They worked 61 out of 71 days. Allowing for Sundays, in order to compare this work with urban employment, it may be stated that these boys had steady work. Each had sent home about $200, and they had a fair chance for from two to six weeks more without going to Canada. . . .

[11] D. D. Lescohier, "Harvest Labor Problems in the Wheat Belt," U.S.D.A., *Bulletin* 1020 (Washington, 1922).
[12] "Harvest Labor Problems," pp. 1–3.
[13] "Harvest Labor Problems," p. 1.

Ordinarily the harvest opens in Texas and southern Oklahoma between June 1 and June 10 and moves northwest at an irregular rate, depending upon the weather, reaching the Canadian boundary about the middle of August. . . .[14]

The harvest labor force, which never has been and probably never can be counted, but which is believed to include from 150,000 to 200,000 individuals, consists of four groups: (1) Residents of towns of the small-grain States who hire out to farmers in near-by territory; (2) men who make contracts with farmers from year to year, and know just when and where they can begin the season's work; (3) transient laborers — farmers, mechanics, and others — who leave their regular employment to work temporarily in the harvest fields; (4) transient laborers who are "professionals," in that the harvest is regularly or frequently a part of their year's work. . . .

The motives which bring the harvest hand to the wheat fields are as varied as human life. This investigation showed the presence in the fields of farmers whose crops had been ruined or impaired by hail, drought, storm, or fire; some who had not enough land under cultivation to afford them a livelihood, and others who were seeking new locations; students and young men who were looking for experience, a vacation, a chance to see the world; prodigal sons trying to earn enough money to return to the homes they had foresaken; soldiers and sailors who had developed a thirst for roaming while in the Army and Navy; and men attracted by the lure of the great out-of-doors or the pleasure of harvesting.

The desire for adventure and experience brings thousands. . . .

The fascination which harvesting itself has always had for the human race is another attractive force. . . .

The hope of large earnings and the lure of adventure attract men to the harvest; *unemployment drives them*. . . .

Of the thousand and one incentives which lead tens of thousands of men to take part each year in the small-grain harvest, these three stand out most prominently: (1) Lack of other employment, either permanent or temporary; (2) the hope of making "big money"; and (3) the desire for adventure and experience. In addition, many thousands of seasonal workers flock to the wheat fields as part of the year's cycle of employment.[15]

The continual fluctuation in harvest labor demand, caused by climate, pests, etc., makes it imperative that additional means be found to facilitate the spread of reliable information concerning harvest conditions among those who constitute the potential supply of harvest labor. The daily bulletins issued by the Federal Employment Service during the winter-wheat harvest may be cited as an important step in this direction. . . .

Most of those who "make the harvest" get no more than a mere subsistence out of the venture. The comparatively small number who save money are those who, through fortunate location or foresight, are able to secure steady work without being forced to make long "jumps."[16]

Lescohier presented methods of forecasting the demand for and recruiting and distributing farm labor according to the farmer's needs.

The same author gave further attention to the demand for harvest labor with special reference to the effect of the use of different kinds of machinery, weather conditions, and a further discussion of mobilization, wages, and hours.[17]

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[14] "Harvest Labor Problems," pp. 3–6.
[15] "Harvest Labor Problems," pp. 14–18.
[16] "Harvest Labor Problems," pp. 34–35.
[17] D. D. Lescohier, "Conditions Affecting the Demand for Harvest Labor in the Wheat Belt," U.S.D.A., *Department Bulletin* 1230 (Washington, 1924).

PART EIGHT

FARM FINANCE

By—

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33.

Agricultural Credit

FROM EARLY COLONIAL TIMES when new farming ventures on the Atlantic seaboard were financed by overseas merchants and traders, the providing of adequate financing for agriculture has been a continuing problem.

Early Colonial Credit Problems

Prior to the Revolution, the acute shortage of capital for the development of the Colonies led to the demand for an enlarged supply of exchange medium. Producers felt that if additional supplies of paper money were issued their economic position would be greatly improved. Schemes for bringing about such an increase in the exchange medium revolved largely around the use of land mortgages as security for currency issued through the private land bank and the public land bank or loan office. In principle, these two types of banks were identical and the operations of the former are described by Sparks:

> The private land bank scheme was the most common method by which the reformers would cure all the ills of low prices and insufficient capital. While the various projected land bank schemes varied somewhat in minor detail, they were all founded essentially upon the following plan: Associations of land owners who needed money should subscribe mortgages on their land up to 50 per cent of its market value to a land bank and receive in return bills of credit which should pass as currency in amounts equal to the face of the mortgage. A very small interest charge was to be made, and the bills were to be accepted by the bank after a certain time in payment of the original loan. Thus the land bank was to be formed by an association of borrowers who were to form a bank and take money out without putting any money in. Only a set of books, some paper, incidentals, and a printing press were essentially required, and these could be obtained with a very small cash subscription.[1]

[1] E. S. Sparks, *History and Theory of Agricultural Credit in the United States* (New York: Thomas Y. Crowell Co., 1932), pp. 50–51. (Select bibliography at the end of each chapter.)

In evaluating the operations of the public land bank or loan office, Sparks states:

Naturally many evils resulted from the poorly regulated administration of the loan offices. Security was over-valued, bad loans were made, favoritism of various kinds arose, and when the borrowers failed to pay, new legislation was often forthcoming to allow easier terms to the borrowers. There is a question as to what extent the loan office might have increased the productivity of the colonies if it had been used moderately and wisely. But the inherent weakness of the system lay at its very foundation. It was argued that real estate security would automatically limit the currency issued on loan so as to provide a stable medium, but the only limit was the capricious will of the governmental assemblies. The natural result was a heterogeneous paper currency with various degrees of depreciation in the several colonies, and with all the familiar evils of an inflated currency. Loan office bills, forced loans, and all other issues, added their respective weight to the fluctuating price level. At least it can be said that whatever utility might have come from a limited irredeemable loan currency was largely wiped out in the excesses which resulted from its administration by popular legislation. One of the most interesting features in the administration of the loan banks is the common method which was used by practically all the colonies in distributing the bills to every part of the country on the basis of tax contribution, so as to make sure that all received their part of the blessing, or new wealth bestowed by the government. One searches in vain through all the colonial loan office regulations for one suggestion that loans should be based on productivity, and that credit has well-defined limitations.[2]

Prior to the Civil War there were developed in the South the so-called "property" banks to meet the capital needs of the great plantation interests. Unlike the earlier land banks or loan offices they sought to attract capital to agriculture by the issue and sale of bonds secured by real estate mortgages. As state institutions they were also authorized to issue notes and perform the functions of a commercial bank. In evaluating their operations Sparks states:

The property banks were in many respects similar to the early private land bank schemes and colonial loan offices. They were associations of borrowers who sought capital in return for a pledge of their real estate. Provision was generally made, as was the colonial practice, to distribute the funds of the bank upon loans among the various districts of the state on some popular bases so that all might have a chance to borrow. Mortgages were to represent property of double value, as a rule, and loans were made either on a long time amortization basis or for one year with the privilege of renewal upon payment of the interest and part of the principal. Notes were issued in many cases with little specie backing and closely resembled those issued under the colonial system, especially the post notes. By many, these institutions were regarded as relief organizations that should dispense funds freely but never attempt to press the repayment of loans. The state regarded them as sources of revenue, which would obviate the necessity of levying taxes.

On the other hand, the property banks marked a great step forward from the early paper money land banks. The endeavor was to attract actual capital by issuing securities upon the basis of mortgages of property, repre-

[2] Sparks, *History and Theory*, pp. 80–81.

senting a safe margin of value. State credit was called into aid in the form of bonds, but these were to be repaid out of the earnings of the bank without the assistance of the state except generally the exemption from taxation, a system which subsidized agriculture. An inherent weakness was that of connecting commercial banking with real estate institutions. The nature of the loans soon drained the banks of specie; hence there was little left to form the basis for note issue. Had note issue been guarded carefully and loans granted wisely, all might have gone well, but there was always a great demand for long time loans in the newly settled districts; hence there were irresistible temptations to employ the printing press as a bountiful source of available funds. The natural consequence was insolvency when the notes were presented in large quantities for redemption.

Again, the banks suffered from poor and dishonest management. The fact that the bank officials were to a large extent subject to the legislatures opened the door for fraudulent practices. Lands were overvalued, large loans were made to favorites on little security, funds were distributed with little regard to the future pay day; in fact nearly every fraud conceivable of a money institution was perpetrated.

In the development of real estate banking in the United States, the property banks may be regarded as the connecting link between the colonial land banks and the present Federal loan banks. With the Federal Farm Loan Act of 1916, paper money was finally divorced from land banking, and only the loan function was retained. But the land banks of today have many features common to their predecessors.[3]

Credit in the Disposal of Public Lands

The early policy in the disposal of the public domain made the federal government an important source of credit in financing farm purchases. Emerick reports:

> The second land act, approved May 10, 1800, required that one-fourth part of the purchase money shall be paid within forty days after the day of sale; [the remainder to be paid in three equal payments in two, three and four years, with interest at six per cent a year]. . . . If any tract shall not be completely paid for within one year after the date of the last payment, . . . [it shall be sold] for a price not less than the whole arears due thereon, with the expenses of sale; the surplus, if any, shall be returned to the original purchaser, or to his legal representative; but if the sum due, with interest, be not bidden and paid, then the land shall revert to the United States, [and all moneys paid therefor shall be forfeited].
>
> Very few questioned the wisdom of the policy embodied in this act. In his report upon the public lands, Hamilton favored it for tracts more than ten miles square, provided security other than the land itself were given. Moreover, it had the prestige of precedent in its favor. It had been employed by the proprietary government of Pennsylvania, and more recently by New York and Kentucky. A credit of one year on one-half of the purchase money was also given by the first land act of Congress in 1796.
>
> The credit system was early recognized as ill-advised. In 1797 a motion extending the time of credit from one to four years was defeated in the House committee of the whole. The opposition argued that "nothing more would be received of the purchasers than the first deposit if so long a credit were given," and that "instead of money they should have petitions sent in for a prolonging of the time of payment." . . .

[3] Sparks, *History and Theory,* pp. 96–97.

The time was now ripe for action, and the remedy applied by Congress was twofold: First, the repeal of the credit system; second, provision for the liquidation of the debt. The latter without the former would have aggravated the trouble. The stock arguments against repeal were, that without credit men of small means could not become purchasers and that the growth of the West would be retarded. The law of 1820, in providing for cash sales, met this by so reducing the price per acre and the minimum tract subject to purchase that, while eighty dollars were required for the first instalment on a quarter section, one hundred dollars would pay in full for a half quarter.[4]

The Spread of Free Banking

Following 1837–38, the spread of free banking made credit more widely available, although too frequently, with undesirable results:

The New York Free Banking Act, 1838

During the entire period up to 1837–38 a bank charter was procurable only by a special legislative act, and this gave semi-monopolistic advantages to banks already in existence. Such a situation did not accord, however, with the vigorous democratic spirit of the times nor with the aggressive spirit of enterprise stimulated by the rapid growth of population, the rapid extension of settlement westward, and the rapid development of rich natural resources. While the borrowing public felt dissatisfaction with restrictions on the number of banks from which credit might be obtained, the public as creditor felt parallel dissatisfaction with the frequent failure of banks to honor their circulating notes. Banking was found to be too rigid in some respects and too weak in others. In 1838 New York adopted a measure — the Free Banking Act — aimed at a radical improvement in both directions.[5] It was an act authorizing any one to procure a charter and engage in the banking business upon compliance with certain general conditions without obtaining a special legislative act. In effect, it changed corporate banking from a monopolistic privilege to a business open to all. It provided that banks pledge securities with the supervisory authorities against their circulating notes. It reflected the popular reaction against the privileged character of special charters, the desire for greater opportunity to invest in bank stock, the pressure for more liberal and abundant supplies of bank credit for economic expansion, and the need for a better circulating medium.

The free banking movement, starting with the New York Act of 1838, was regarded by both its advocates and its opponents as a movement to liberalize credit. It was intended to increase the number of banks and release credit from so-called monopoly control. [Albert] Gallatin [Secretary of the Treasury, 1801–13] said that the New York Act bore "internal evidence that it was prepared by speculators."

Abuses and Restrictions

Free banking spread rapidly to other States. In the West it degenerated into "wildcat" banking; banks were established in remote, inaccessible places where it was alleged that only wild cats throve and where there was little chance that circulating notes would find their way for redemption. Speculators and swindlers took advantage of frontier ignor-

[4] C. F. Emerick, "Government Loans to Farmers," *Political Science Quarterly* 14:444–45, 446, 445, (September 1899). (Emerick's numerous citations to source material have been omitted from this quotation.)

[5] While free banking legislation was still pending in New York, a measure based upon it was enacted in Michigan in 1837.

ance of investment securities and made it a regular practice to purchase bonds of little worth, pledge them in exchange for their face value in circulating notes, and vanish. There arose an intense opposition to banks, for which free banking abuses were only partly responsible. On one ground or another, hostility to incorporated banks and to their issuance of notes had always been active. The State constitution of Iowa prohibited them from 1846 to 1857, when banking was made a State monopoly. The constitution of Texas, adopted in 1845, forbade the creation of any corporate body "with banking or discounting privileges." In Illinois a movement to prohibit banks failed in 1847 by only a narrow margin. At various times, legislation in still other States reflected a distrust of banks and in particular of their note issue function, though neither the scope nor the effect of the measures is in all cases clear.[6]

Pre-Civil War Financing of Southern Agriculture

Financing the southern agricultural producer before the Civil War has been described by M. B. Hammond:

Although nearly every writer who has attempted to describe southern agricultural conditions has had something to say about the credit system with which southern agriculture was involved, definite information concerning this interesting phase of rural economy previous to the war, is difficult to obtain. Pre-bellum writers have usually contented themselves with deprecating the practice of the southern farmer by which he rendered himself dependent upon factors or merchants by pledging his crops months ahead of harvest in return for advances made by these factors, but they have told us little concerning the terms of the contracts or the extent of the practice. Later writers who have described the credit system have often overlooked the fact that this system existed previous to the war, and have seemed to indicate that liens on crops are a phenomenon which has been produced by the changes wrought in southern agriculture since 1865.

Yet agricultural credit is no new phenomenon in the South. The custom of "anticipating crops by engagements founded upon them" existed in South Carolina, according to Ramsay, even before the Revolution, when advances seem to have been made by the English merchants. The desolation in the South caused by the war for independence increased the planter's need of obtaining credit, although the securing of this credit was rendered more difficult, "for the indulgence formerly granted to subjects in Carolina has seldom been extended to citizen planters." "The merchants, knowing the value of the staple commodities of Carolina, were very liberal of credit to the planters; but on terms of enhanced price, as a security against loss and protracted payments." And thus the obtaining of credit, which at first was a result of the necessity of beginning agriculture at all, continued either because of the lack of economy on the part of the planter, or because the dependence upon one crop, which often failed, compelled the cotton growers to pledge future crops in order to continue planting. . . .

The chief borrowers in the cotton belt were the large planters. The small farmers in the hill country who raised their own provisions, and who bought little and sold little, had small use for the mechanism of credit, even if they had been considered desirable debtors. Negroes were usually sold on credit, even to the small farmer, however, provided he had already secured means to purchase one slave for cash. The possession of one slave seemed to be a guarantee that the owner would be able to pay for a second one. The desire

[6] Bray Hammond, "Historical Introduction," in *Banking Studies,* pp. 9–11, by Members of the Staff Board of Governors of the Federal Reserve System (Baltimore: Waverly Press, 1941).

to increase slave property was a frequent cause of the planter running in debt. In addition to their slaves, it was customary for a large part of the planters to buy on credit the provisions and clothing for the Negroes and the tools and stock needed on the plantation. The factors at the port towns where the cotton was sold were usually the money lenders, although sometimes the merchants of New York made advances on the growing crops. The merchants in the southern cities sold their goods on credit, charging necessarily much higher prices than when they sold for cash. Even then the risks were so great that in 1855 the Southern Commercial Convention recommended the chambers of commerce and commission merchants of the southern and southwestern cities, "to adopt such a system of laws and regulations as will put a stop to the dangerous practice heretofore existing of making advances to planters in anticipation of their crops — a practice entirely at variance with everything like safety in business transactions and tending directly to establish the relations of master and slave between the merchant and planter by bringing the latter into the most abject and servile bondage;" and they also recommended "the legislatures of the Southern and Southwestern states to pass laws making it a penitentiary offense for the planters to ask of the merchants to make such pecuniary advances." Very little seems to be known concerning the rates of interest or discount on loans made to the cotton planters previous to the war. Olmsted was told that farming land in the Mississippi Valley was usually sold on the installment plan, the purchaser paying down what he was able to pay and giving security for the remainder. The rate of interest in such cases was ten per cent. If the planter was unable to pay when the notes became due, he was obliged to borrow money from the Jewish money-lenders at New Orleans, paying often as much as twenty-five per cent. per annum for the loan, and pawning his furniture, jewels, carpets, etc., as security. Mortgages on farming land were almost unknown at the South, the low value of land and the exhaustive system of culture making this form of security undesirable. A planter's wealth was gauged by the number of Negroes he held, and not by the number of acres he owned.

The crops then growing or yet to be planted became, therefore, almost the only security which could be furnished by the planter desiring to borrow money or purchase supplies. When a planter had prepared his ground for cotton he would go to the factor at the nearest market, describe his land, the number of acres he expected to plant, and the factor having satisfied himself of the truthfulness of the statement would make the desired loan, taking a lien on the crop as security. The rates of interest on these loans varied considerably, according to the commercial integrity of the borrower, the fertility of the land, etc., but the rates were always high as compared with interest rates at the North. "Every person familiar with the condition of trade in the Southwest," wrote a Southerner, "knows what an enormous tax is levied by factors on planters for the advances made the latter. Ten, twelve, fifteen or more per cent. are the common rates of interest charged for these loans. Besides, the planter is placed completely in the power of the factor. The crop is often sold to satisfy the exigencies of the latter's situation. This custom is likewise most oppressive to the factor. It obliges him to keep up a large amount of capital, and exposes him to a variety of hazardous risks. Many of the factors who had outstanding accounts with the planters at the outbreak of the war were completely bankrupted, owing to the inability of the latter to make good their promises of repayment.[7]

[7] M. B. Hammond, *The Cotton Industry: An Essay in American Economic History,* Part I: *The Cotton Culture and the Cotton Trade,* American Economic Association, *Publications* (December 1897), n.s., No. 1, pp. 107–12. (Hammond's numerous citations to source material have been omitted from this quotation.)

In discussing the system of agricultural credit Hammond points out:

The prices which southern farmers have been obliged to pay for merchandise bought on a credit basis have been the subject of frequent comment by recent writers on the South. Various statements and bits of information have been published which show that in numerous individual instances credit prices from ten to two hundred per cent. higher than cash prices for the same articles have been charged the luckless farmer who became the victim of the crop lien. Careful statistics on this subject have never been collected from all the cotton states. Several of the state bureaus of agriculture have through their correspondents collected data on the subject and published the results in tabulated form. But in only two of these states, Georgia and Louisiana, has the investigation covered more than a single year, and of these two, Georgia has abandoned the effort since 1890.[8]

Early Farm Organization Views on Finance

In the early farmer movements, decided views were expressed on financial problems. One organization, the Agricultural Wheel, according to Drew:

. . . owed its origin to dissatisfaction in the South with certain features of the economic situation among the farmers. Throughout the South, it is a common practice for the small planter to mortgage his ungrown crop to the country merchant for seed and food supplies. As a rule these mortgages were held to give only an equitable interest in the produce, but in Arkansas, where they were known as "anacondas," — from their resemblance to the serpent that swallows things whole, — the mortgagee was given a lien not only on all the mortgageor [sic] had, but also on all that he might in any manner acquire during the specified time. By the terms of the contract the planter was bound to harvest his crop at the earliest possible date and turn all of it over to his creditor, who would give back the surplus, if there was any. The result of this was practically a condition of slavery. This state of affairs led in 1882 to the formation of an association in Arkansas which, from a neighborhood society in a single county, had by 1887 become a national body, claiming 500,000 members, scattered over the states from Wisconsin to Alabama and Texas.[9]

The first plank of the St. Louis platform, adopted by the "Southern" Alliance, in conjunction with the Knights of Labor, on December 6, 1889, and at the annual meeting at Ocala, Florida, in December, 1890, was as follows:

We demand the abolition of national banks, [and the substitution of legal tender treasury notes in lieu of national bank notes; issued in sufficient volume to do the business of the country on a cash system; regulating the amount needed on a per capita basis as the business interests of the country expand; and that all money issued by the government shall be legal tender in payment of all debts, both public and private.]*

[8] Hammond, *The Cotton Industry*, p. 152.

[9] F. M. Drew, "The Present Farmers' Movement," *Political Science Quarterly* 6:284, (June 1891).

* At Ocala, all within the brackets was stricken out, and in its place was inserted: "We demand that the government shall establish sub-treasuries or depositaries in the several states; which shall loan money direct to the people at a low rate of interest, not to exceed two per cent per annum, on non-perishable farm products, and also upon real estate, with proper limitations upon the quantity of land and amount of money. We demand that the amount of the circulating medium be speedily increased to not less than $50 per capita."

The "Northern" Alliance platform, adopted at the same time, asserted:

2. We demand the abolition of the national banking system and that the government issue full legal tender money direct to the people in sufficient volume for the requirements of business.[10]

Drew, in classifying the attitudes of the farm organizations on financial matters, reported the Grange, "Northern" Alliance, "Southern" Alliance, Colored Alliance, Mutual Benefit Association, and Patrons of Industry as favoring: (1) Abolition of national banks, (2) free coinage of silver, (3) "sufficient" issue of paper money. All six, except the Patrons of Industry, favored loans on land. The "Southern" Alliance, Colored Alliance, and Mutual Benefit Association favored the establishment of sub-treasuries.

Drew, in commenting on these views, states:

Our banks of issue find no defenders among the platform makers. The *Journal of Agriculture,* official organ of the Farmers' and Laborers' Union of Missouri (the name of the Missouri branch of the "Southern" Alliance), has the following in its issue of August 14, 1890:

"These [national] banks were conceived in infamy and were organized for no other purpose but to rob the many for the benefit of the few. The establishment of national banks was of the same character of vicious legislation that demonetized silver and changed the terms for the payment of our national bonds. The infamous scoundrels who perpetrated these frauds, if they had lived in any other country under the sun, would have been hung without judge or jury or sent to the penitentiary for the rest of their natural lives, either of which would have been no more than they deserved."[11]

The demands for a "sufficient" issue of paper money cover a wide range, from the unqualified call for a purely fiat currency of "$50 per capita," to the cautious declaration of the Patrons of Industry; "If for any reason the output of gold and silver should not keep pace with the increasing necessities of the country, we are in favor of increasing the issue of United States legal tender notes." Indiana is the only section noted that recognizes an "international bearing" in the matter of silver, and asks for negotiations on the subject. The proposal to put this increased volume of money into circulation by means of loans on land, at not more than two per cent interest, is quite general; for, as the farmers interpret Congress's dealings with the Pacific railroads, and the present proposition for a 100-year extension of the Union Pacific debt, governmental foreclosure is a remote and improbable contingency. The president of the Wisconsin Alliance had a plan whereby farmers could use their land as a banking basis, on which to issue bills. Besides getting the use of this money from the government without interest for from one to twenty years, he assured his listeners that about ten per cent of the bills issued by the banks never came back, and constituted a clear gain which under his plan would accrue to the farmers.

But as land is limited in amount, and once mortgaged, unavailable for further loans except by the Wisconsin plan, which seems to have no following, the sub-treasury scheme is relied upon as promising the most effective channel for the "sufficient" issue of money. The leading features of the bill

[10] Drew, "The Present Movement," pp. 291, 293.
[11] Drew, "The Present Movement," pp. 295–97.

as presented to the last Congress are as follows: In each county which raises and sells $500,000 worth of grain, cotton and tobacco, government warehouses are to be built in which any surplus may be stored. The producer may draw treasury notes to the amount of eighty per cent of his deposit, at the same time giving a lien on his deposit, and signing an agreement to pay storage charges and one per cent interest on the money advanced. I am not sure of the position of the Grange on this scheme, as its utterances have been dubious. At its meeting in 1890, in Atlanta, it demanded that the government should lend its credit directly to the people "on land or other good securities." The Michigan State Grange in December was "surprised that the National Grange should allow itself to be carried away by the clamor," declared that the scheme would "prove a curse instead of a blessing," and denounced it roundly. The Missouri Farmers' and Laborers' Union is also bitterly opposed to the measure. The extract from their official organ relating to the national banks, quoted on page 295, was followed by the remark that the sub-treasury scheme is "a measure more infamous than the national banks." The number of warehouses needed, on the present basis of production, is estimated at about 817, "or just about the present number of national banks." Of these New York would get 8; Texas, 61; Massachusetts, 0; Arkansas, 36; Pennsylvania, 20; Illinois, 48.

The Populist Movement which followed shortly thereafter continued with much the same demands. These demands were embodied in the platform of the People's Party at its first Presidential nominating convention held in Omaha in 1892. As reported by McVey:

. . . The various platforms have been on the whole very much alike. There has been, however, a gradual increase in the number of demands. The St. Louis platform of 1889 contains only eight planks, the Ocala eight, Cincinnati twelve, St. Louis, 1892, ten, and the Omaha thirteen. Free coinage, government control or ownership of railroads, the sub-treasury scheme, sufficient paper money, revenue of state limited to expenses, and non-ownership of land by foreigners, are the demands put forth in every platform. During the last three years nothing has been said about the prohibition of futures. The trade in futures has been one of the chief elements of complaint among the farmers; but the party has abandoned it as an issue. The real issue, according to the Populist, is financial. The party, by taking one side of the money question, hopes to force one of the old parties out of the field, and thus to place itself in a position of power as one of two parties, instead of being a mere third party.[12]

Western Expansion Brings Financial Problems to East

With the rapid extension of railroads into the West during the seventies and eighties, the consequent expansion of agricultural production brought on new financial problems for the East. Emerick, in commenting on this situation states:

But while an increase of facilities for transportation enhances farm values in new countries, it ultimately exerts quite the opposite influence upon the older farming communities. Consequently, while agricultural lands in nearly all of the western division of the North Central States, and in Wisconsin and perhaps Illinois of the eastern division, have been rising in value

[12] F. L. McVey, "The Populist Movement," American Economic Association, *Economic Studies* 1:141 (August 1896).

during the past fifteen years, in all of the remainder of the Northern States east of the Mississippi farms have not only greatly declined in value, but in some cases have been abandoned. In support of this statement there is an abundance of evidence.[13]

Emerick quotes from official reports and other published documents giving figures for depreciation of land values in most of the New England States, New York, New Jersey, Ohio, and Michigan.

In this connection, The New York Association for Improving the Condition of the Poor undertook an "Inquiry Into the Causes of Agricultural Depression in New York State."

"At a meeting of the Board held April 16, 1894, the following resolutions were passed:

"*Whereas,* The suffering among the wage-earners of this city during the past winter has been but an accentuated form of a chronic evil resulting from the tendency of population to concentrate in cities, thereby over-supplying the municipal labor markets; and

"*Whereas,* This serious hindrance to the improvement of the condition of the poor exists contemporaneously with an unsatisfied demand for agricultural help in rural localities; therefore

"*Resolved,* That the effort of intelligent philanthropy should be particularly directed towards the relief of the congested condition of the cities by affording every possible encouragement towards settlement in agricultural communities;

"*Resolved,* That an exhaustive inquiry into this subject should be made during the coming summer, and that the Association appeal to the 'Citizens' Relief Committee' to appropriate from the fund remaining in their hands a sum, not to exceed $5,000, to cover expenses involved in making such an inquiry."

They secured the services of a Mr. Kjelgaard, an intelligent Pennsylvania farmer, to travel through such of the agricultural districts of New York State as he could reach during the summer months with the purpose of gathering information by personal inquiry and observation. At the same time, Mr. George T. Powell, of Ghent, Columbia County, New York, undertook at the Committee's request to conduct by correspondence an inquiry identical with that pursued in person by Mr. Kjelgaard. Mr. Powell's wide acquaintance throughout the State, and his reputation as an agricultural expert, gave him unexcelled facilities and advantages for gathering the desired information. . . .

The financial aspects of this survey were summarized:

In response to question No. 4, Mr. Powell reports that 70 per cent, of the farmers are not reducing their land indebtedness, while 20 per cent, are doing so, and 10 per cent, are on an extension of time given on mortgages overdue. Mr. Kjelgaard reports that 35 per cent, of the New York farmers are losing money; 30 per cent, are dangerously near the line of running behind; 14 per cent, are making a profit, and 21 per cent, have no knowledge either way, from their failure to keep any accounts.

Replies to question No. 6 show that the farmers are not paying more than 6 per cent, interest for their money, and that 64 per cent, report no

[13] C. F. Emerick, "An Analysis of Agricultural Discontent in the United States," *Political Science Quarterly* 11:453–55 (September 1896).

knowledge of accounts being kept, while 36 per cent, give the names of farmers who keep accounts and can show some profit in farming.

In discussing the depreciation of farming land Peters did not give as much weight to the expansion of Western agriculture as had been given by Emerick (cf. p. 901):

. . . Whatever advantage the Western husbandman possesses in lower-priced, more fertile, and easier tilled land is offset by the Eastern husbandman's lower rate of interest, smaller outlay for machinery, less waste, and more thorough cultivation. The average yield per acre of wheat and of maize is as great in the East as in the West; and any butcher will testify that prime Eastern fatted beef or pork is equal, if not superior, to the Western product. The great wheat-growers of Dakota and California, as well as the Territorial cattle-ranch proprietors, do, indeed, have the same advantage over the proprietors of smaller holdings that any other enterprise employing a hundred has over one employing a half-dozen hands; but they at the same time undergo greater risk, the failure of a single year often making them bankrupt. It is difficult to understand why Eastern and Middle State husbandmen at the present time have any more reason to complain of Western competition than did those in the days of their fathers and grandfathers.[14]

State Statistical Bureau Credit Studies

With the establishment of state statistical bureaus in the Midwest in the late seventies and early eighties, the first organized efforts at obtaining statistical data on agricultural credit were developed. Space does not permit of more than a brief reference to the reports of these bureaus in the various states.

INDIANA

The first annual report of the Department of Statistics and Geology of the state of Indiana, covering the year 1879, presents data from Recorders' reports for 29 counties on total number and amounts of real estate and chattel mortgages and mechanics' liens recorded and released, and the number and type of real estate transfers. The data are presented for 7 years, 1872–73 through 1878–79. In commenting on these tabulations, the report states:

The reports from Recorders as to mortgages, deeds, sales of land, etc., the production of which involved much labor, are of the highest interest in connection with the trying monetary crisis just passed; they, as well as other tables of business, trade, etc., are referred to political economists. . . .

The number and amount of unsatisfied mortgages as shown is an overestimate of the mortgaged indebtedness of the country, as many mortgages are unsatisfied on the record that are well known to be paid. The satisfactions do not show the credits due from partial payments. If it is worth while to keep a Recorder's office, it is also worth while to sufficiently provide that such office shall at all times show the exact state of facts. Some more efficient method of compelling creditors to enter satisfaction on paid or partially paid mortgages, with a less tedious and expensive way of enforcing

[14] A. H. Peters, "The Depreciation of Farming Land," *Quarterly Journal of Economics*, 4:20, (October 1889).

it, should be enacted. No instrument for record should be in force until recorded.[15]

ILLINOIS

The first known attempt at making an estimate as to the total farm-mortgage debt for a particular state was undertaken by the state of Illinois. The 1888 biennial report of the Bureau of Labor Statistics of that state presented for the years 1870, 1880, and 1887 tabulations, by counties, of the number, amount, term, and interest rates on mortgages on land (as distinguished from lots) recorded and released in those 3 years. As an explanation for making this study, the report states:

> Possibly no abstract statistics could furnish a truer index of the financial status of the people than the record of the farms, live stock and crops mortgaged for borrowed money; or of the houses and lots, household goods, and wearing apparel of those living in towns, pledged for debt. On the other hand there is equal significance of another kind in the number and character of mortgages given for balances of purchase money, as indicating a disposition and ability on the part of the mortgageor [sic] to increase rather than diminish his possessions. Facts of this character, especially if developed for consecutive periods, contribute alike to the elucidation of the broader economic problems, and to the specific knowledge of classes and localities. Such a compilation is here presented for the State of Illinois. It has been undertaken for the general purpose of fixing the measure, character and distribution of the private debt which rests upon the people, and which together with the various forms of public debt constitutes a burden, in interest and taxes, which, it is frequently claimed, must in the last analysis be paid by the wages of labor.[16]

NEBRASKA

The First Biennial Report of the Bureau of Labor and Industrial Statistics of the state of Nebraska contains the summary of a questionnaire survey to farmers. Among other items the questionnaire asked for information as to whether the farmer was an owner or renter; whether the farm was mortgaged; rate of interest on mortgage; value per acre; whether the farmer had accumulated savings, etc. The reports were summarized:

> Out of a list of 200 inquiries answered by farmers of this state, the following is the result:
>
> One hundred and seventy-one, married; twenty-nine single and widowers; one hundred and five, farms mortgaged.
>
> Rates of interest:
>
> Two pay 11 per cent; twenty-two, 10 per cent; twenty-nine, 9 per cent; thirty-three, 8 per cent; thirteen, 7 per cent; four, 6 per cent; and two say they do not know what they pay.
>
> In answer to the question, what causes failures of farmers? the replies are as follows:

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[15] Indiana, Department of Statistics and Geology. First Annual *Report*, 1879 (Indianapolis, 1880), pp. 33, 335.

[16] Illinois, Bureau of Labor Statistics. Fifth Biennial *Report*, 1888 (Springfield, 1888), p. XIX.

Twenty-one answered, no organization; fifty-five, careless about going into debt; fifty-one, buy too much machinery; nineteen, do not take care of machinery; seventy-six, too high rates of freight; forty-nine, poor crops; eighty-eight, too high rates of interest, from 2 to 4 per cent per month; twelve, high price of fuel; forty-nine, monopolists; fifty, low price of produce; twenty-eight, too much loafing; sixteen, too much drinking; thirty-two, living beyond income; eleven, high price of lumber; nineteen, high taxes; eighteen, loss of stock; thirty-five, mismanagement; seven, overproduction; ten, too many mortgages.[17]

MICHIGAN

The application of a ratio of debt to value based on a partial segment of all farms to the total value of all farms to arrive at an estimate of total farm-mortgage indebtedness apparently was first developed in Michigan. The Fifth Annual Report of the Bureau of Labor and Industrial Statistics refers to this study as follows:

The following tables have been carefully compiled and tabulated from reports received from supervisors, who gathered the data directly from the farmers at the time of taking the assessment of their respective townships during the month of April, 1887, upon blanks specially prepared and furnished for this work.

The information contained therein is therefore entitled to credit, and is of great importance not only to those engaged in agricultural pursuits but to all who are interested in other branches of industry.

The assessed valuation of all farms reported is $194,854,633. The mortgage indebtedness $37,456,272, or a little more than 19.2 per cent of the total assessed valuation, and 46.8 per cent of the assessed valuation of the farms mortgaged. The average rate of interest is 07.2 per cent, which amounts to $2,701,669 in interest annually.

Estimating all the farms in the State on the basis of reports we have an assessed valuation of $335,378,025, and a mortgage indebtedness of $64,392,580.80, with an annual interest of $4,636,265.81 on farms alone.

If we estimate the mortgage indebtedness on the entire real property in the State, except the counties of Alger, Chippewa, Houghton, Iron, Isle Royal, Keweenaw, Luce, Ontonagon, Roscommon and Schoolcraft (from which we have but meagre reports) on the same basis, using the assessed valuation of 1886 as the valuation for the estimate, which is $686,614,741, we find a mortgage indebtedness of $129,229,553.01 in the State, the annual interest amounting to $9,451,851.24.

When we consider that 47.4 per cent of the farms are covered by mortgage, and the mortgage indebtedness is 46.8 per cent of the assessed valuation of the farms mortgaged, and that in *interest alone* these farmers are paying annually $2,701,669 on 43,079 farms reported as mortgaged, or $4,636,265 as estimated on all farms in the State, we can readily see where a large percentage of the surplus arising from the products of the farm is expended. Interest must be paid. . . .

The financial conditions as herein reported are not confined to Michigan alone. In nearly every State may be found a counterpart. With these conditions changed and general prosperity restored to the people of the country, the conflict between capital and labor would be greatly modified.

The present conditions are without doubt due to the high pressure

[17] Nebraska, Bureau of Labor and Industrial Statistics. First Biennial *Report,* 1887 and 1888 (Omaha, 1888), p. 217.

system of business the country has passed through, and the changed condition of things renders it impossible to realize the results of former years. In fact, a very large proportion of the people seem to be in a financial rut, and are unable to extricate themselves. The farmer hopes each year that crops and prices will be better, but is destined to disappointment as the year comes around.

The merchant anxious for business, and trusting in the ability of the farmer to meet his account for goods, supplies his wants, only to be disappointed in turn, thereby entailing financial embarrassment upon the manufacturer, which, as has already been stated, re-acts upon the laborer.

The foreign money lender having the first mortgage steps in, draws his interest, and runs away, leaving the rest to meet the demands for public purposes.[18]

The report also presents data, by counties, showing the number of mortgage foreclosures, and number of redemptions, also the number of sales on levy of execution, and number of redemptions, as reported from the records of each county, for the year ending July 31, 1887. Another interesting feature of this report is a comprehensive tabulation "Showing by townships as reported the number of each nationality, average number of years in the United States; number having money on arrival; amount brought; assessed valuation and mortgage indebtedness, together with the number of Americans, their assessed valuation and mortgage indebtedness."

CONNECTICUT

The Fourth Annual Report of the Bureau of Labor Statistics of the state of Connecticut in reporting the results of a survey of 693 farms, commented on the mortgage status:

It has been supposed that farms were generally becoming heavily, if not hopelessly, mortgaged. The tables show that of the six hundred and ninety-three farms visited, two hundred and forty-one, or thirty-four and nine-tenths per cent are mortgaged. The total amount of the mortgages is ten and nine-tenths per cent of the total value of the land in the six hundred and ninety-three farms. Thirty of the farmers reporting mortgages also report money at interest. The total value of the farms mortgaged is $1,008,350, and the total amount of the mortgages is $351,109, or a little over one-third (.3482) of their value.

Of the two hundred and forty-one mortgaged farms, one hundred and five show a profit. Of the six hundred and ninety-three farms reported, three hundred and fourteen report average profits of $362.88, while three hundred and seventy-eight report an average deficiency of $258.69[19]

NEW JERSEY

The Twelfth Annual Report of the Bureau of Statistics of Labor and Industries of New Jersey reports on a comprehensive study of "Real Estate Mortgage Indebtedness and Foreclosure Executions." In the opening statement of the report we find this statement:

The extent of mortgage indebtedness is a subject which at present is

[18] Nebraska *Report,* Feb. 1, 1888, pp. 1–3.
[19] Nebraska *Report,* year ending Nov. 30, 1888, pp. 143–44.

attracting an unusual amount of attention in this country. The alleged increase of real estate mortgages, particularly of those on agricultural lands, is asserted to be one of the dangerous signs of the times, and that, so far as our farmers are concerned, it is a burden which, taken in connection with the falling value of land, bids fair to drive them to the wall, or at least forebodes the substitution in the near future, of the tenant, for the independent small farmer. These alarmist allegations, however, do not pass without question, for it is argued with a considerable degree of plausibility that the absence of mortgages is not necessarily a measure of the prosperity of either the farmer or manufacturer. On the other hand, it is not denied that, ordinarily, borrowed money applied to productive industry is a benefit to the whole community, the contention being that the position of the farmer and manufacturer in this respect is by no means similar, and least of all at the present day when farming does not pay, the farmer being compelled to borrow, not to extend his business, but to keep his head above water, the interest on his mortgage, especially if made in times of inflated values and high prices, eating up his substance.[20]

In outlining the scope of the study, the report states:

. . . it was found inadvisable to take up the subject of recorded indebtedness in New Jersey, but the number of real estate mortgages recorded in the several counties in 1870, 1875 and 1880 to 1888 inclusive have been collated: being supplemented, for Essex county, by the amounts of the mortgages recorded during several years. These data in detail, as well as the statistics showing the number, nature and amount of the real estate foreclosures issued during a series of years, will be found at the end of the chapter. The years covered by this latter inquiry are 1856, 1870, 1875 and 1880 to 1888 inclusive, twelve as representative years as it was practicable to select. The nine last years include the period immediately following the recovery from the financial depression which began in 1873. In 1875, we were in the midst of that depression while 1870 was a year of very considerable business activity. The preceding decade was an abnormal one, with the exception of the year 1860, into which, however, it was found that the foreclosure proceedings of 1859 had been crowded, owing to the dispute between the Governor and State Senate over the nomination to the office of Chancellor. The Court of Chancery was closed during the greater portion of the latter year, and hence during that period the only foreclosure suits instituted were those in the circuit courts. Previous to this occurred the industrial depression of 1857–8; but 1856 was a free and prosperous year.[21]

In summarizing the statistics on foreclosures the report observes that:

The conclusion to be drawn from what has been stated is, that, other things being equal, the number and nature of the foreclosures, rather than the extent of the mortgage indebtedness, indicates the degree of prosperity of the land owning classes. But even this is not an infallible barometer, for, as in the case of the farming community, the decrease in foreclosures and the comparatively small rate of increase in mortgages on agricultural lands must be credited, largely, to falling land values and the consequent deterrent effect, not only on possible new loans, but particularly on the holders of mortgages to push delinquent mortgagors, because the outcome of a forced

[20] New Jersey, Bureau of Labor and Industries. Twelfth Annual *Report*, 1889 (Camden, 1890), p. 307.
[21] New Jersey *Report*, pp. 317–18.

sale under the circumstances is likely to be the buying in of the encumbered property by the mortgagees themselves.[22]

MASSACHUSETTS

In 1889 and 1890 the Bureau of Statistics of Labor of the Commonwealth of Massachusetts undertook a study to determine the extent of abandoned farms in that state.[23] In obtaining the data the services of the assessors of the several towns were utilized.

WISCONSIN

The Seventh Biennial Report of the Bureau of Labor, Industrial and Census Statistics of the state of Wisconsin, issued in 1896, likewise presented data on certain aspects of the farmers' financial position. Among other items of information presented for 555 individual farm returns were answers to these questions:

If your farm is mortgaged, what interest do you pay?
Have you accumulated any savings during the past year? During the past five years?
Did you run into debt during the past year?
Do you carry any life insurance?
Are you insured against fire?

Several pages were also devoted to giving representative answers to the two following questions:

What in your opinion are the chief causes that lead to a farmer's failure?
Give your opinion as to any measure that would ameliorate the condition of the farmer.[24]

MINNESOTA

Probably the most comprehensive study, from an analytical viewpoint, of this early group of studies undertaken by state labor bureaus, is that published in the Fourth Biennial Report of the Bureau of Labor of the state of Minnesota, in 1895. On the basis of annual data on the number and amount of farm mortgages recorded and the percentage of taxable acres mortgaged, covering the period since 1859, the report sets forth what may be called . . .

The Economic Laws of Mortgage Debt

(1) The mortgage debt secured upon acre property and the number of acres mortgaged in a new farming county or community, within certain limits, always increases with more or less regularity from its first settlement until the greater share of its farm lands are occupied by bona fide settlers. (2) As such a county approaches a period of complete development, the amount of its mortgage debt and the number of its mortgaged acres increase less rapidly than do the number of acres of taxable lands and the value of farms, and hence the relative amount and acreage of mortgages on land

[22] New Jersey *Report,* p. 323.
[23] Massachusetts, Bureau of Statistics of Labor. Twenty-First Annual *Report* (March 1891), Public Doc. No. 15, pp. 256–57.
[24] Wisconsin, Bureau of Labor, Census and Industrial Statistics, "Farmers' Returns," Seventh Biennial *Report,* 1895–1896 (Madison, 1896), pp. 99, 109, 110, 111, 112–35.

begin to decrease. (3) When a county has once had practically all its taxable lands settled and fairly well improved, the actual number of acres mortgaged and the amounts secured by mortgages begin to decrease and continues to decrease until a minimum limit is reached, after which there is no great or noteworthy change in these items of farm mortgage debt. Those items may fluctuate with a wave motion from year to year depending more upon change of ownership than any other single cause.[25]

Discussing the effect of crop failures upon farm-mortgage activity the report concludes:

. . . Farm disasters always lead to decreased mortgages on farm lands. The profit on wheat raising in the years before 1876 so stimulated the business that it led to the large relative mortgage debt on acres incurred in 1876. But the disaster of 1876 had its effect in the year following, when the mortgage debt incurred on acres was relatively barely one-half of what it was in the preceding year. The same relation between farm prosperity in a new section and increased debt and farm disaster and decreased mortgages may be noted in these special counties for other years.[26]

The same report also contained an exhaustive analysis of foreclosures under the title "Mortgage Foreclosures in Minnesota—The Changing Burden of Debt." This study covered the same areas as in the preceding study. Some of the conclusions reached by this study were:

At no time since the admission of Minnesota has the chance of farm mortgage foreclosure been anywhere near so small as at the present time.

In all the history of the state there can be traced two sources of mortgage foreclosure. One that has been designated as fixed and permanent and the other as variable or transient. The fixed or permanent factor is that which arises from the imperfection of the farm owner, that which is due to his lack of experience, his shiftlessness and want of character or knowledge or energy. The most important variable factors are crop failures and varying prices for wheat.

From 1858 to 1875 the only one of these two latter mentioned factors that can be fully recognized and traced is that of varying wheat prices. Down to the end of that year every change in wheat prices is accompanied by the reverse change in mortgage foreclosures, higher prices leading to decreased foreclosures and the reverse.

From 1876 to 1881 the greatest single determining factor of mortgage foreclosures was crop failure due to drought, blight, visitation of grasshoppers and chinch bugs. These caused, for 1876, 1877 and 1878, a rate of foreclosure slightly different from what would have resulted from the action of wheat prices alone. In 1880 and 1881 they caused a wide variation from what would have been noticed had varying wheat prices been the one determining factor.

From 1881 to 1890 the effect of the wheat prices upon mortgage foreclosures can be traced in all the newer groups of counties such as Group III in 1884 and 1885, and in Group IV in 1889, and the effects by crop failure can be noted at times as in Group IV in 1890, and other similar causes in 1891. During the same period there can be traced the influence of diversified

[25] Minnesota, Bureau of Labor, "Real Estate Mortgage Indebtedness in Minnesota," Fourth Biennial *Report*, 1893–94 (St. Paul, 1895), pp. 402–03.
[26] Minnesota, *Report*, p. 406.

farming which had been introduced in Group I in the years 1876 to 1881, as the result of the successive wheat failures in the counties included therein.

The influence for good of this new system of farming is so great that in 1892 and 1893 it overshadowed and outbalanced in large degree the evil results that followed the low and falling price of wheat.

The farmers have so improved their methods of farming, even in wheat raising sections, that the evil effects of low wheat prices in 1893 are reduced to small proportions. As a result the acres of farm land foreclosed and the amounts involved were less than those resulting from the failure of one speculation of real estate in a single small county like Anoka.

In thirty-five years the rates of interest for farm loans have decreased from the prevailing rate of from three to ten per cent a month in Mower in 1859 and 1860 to an average of not far from eight per cent per annum in 1893.

Farmers are able to secure loans even on poor lands alone more nearly approximating the estimated value of those lands than they could at any period in the past. Hence, when losing their farms by foreclosure, their losses are relatively only from one-half to two-thirds as great as twenty or even fifteen years ago.[27]

Under the heading "Agricultural Statistics" individual data are presented for tenants and farm owners to show "The Present and Relative Condition of the Farmers in Minnesota."[28] Summaries were also included tabulating the data by nationalities.

Federal Enumeration of Farm-Mortgage–Debt Statistics

The widespread interest in the mortgage-debt problem during this period meanwhile culminated in congressional action directing the Census Office to ascertain the facts:

Under the act of Congress providing for the taking of the Eleventh Census the Superintendent of Census was required to "collect the statistics of, and relating to, the recorded indebtedness of private corporations and individuals." This extraordinary addition to the regular census work was the consequence of considerable popular concern in regard to the present condition of mortgage debtors and their probable fate under a tendency which was supposed to be increasing their number and their burdens.

The desire for mortgage statistics had not been first expressed in this country, but was mentioned as early as 1863 at the meeting of the International Statistical Congress at Berlin, when the subject was debated by some of the most eminent statisticians of Europe. In 1867 the subject was revived at the congress held at Florence, and it was decided to begin an investigation, which, at the request of the congress held at The Hague in 1869, was soon afterward undertaken by the department of finance of the Netherlands. Again in 1876, the congress held at Vienna resolved that governments should collect mortgage statistics, and before 1890 the governments of Sweden, Prussia, Austria, and Hungary had collected such statistics, which consisted of transcripts from the public records.

The demand for information in regard to mortgage debt in the United States grew out of widespread discontent among farmers and workingmen and the discussions of persons interested in social science. This led to the investigations of the problem in 1887 by the bureaus of labor statistics of

[27] Minnesota *Report*, pp. 498–99.
[28] Minnesota *Report*, p. 60.

several states, and before 1890 work in this direction had been completed or begun by the bureaus of Illinois, Michigan, Connecticut, Ohio, and New Jersey.

Mortgage statistics obtained in the execution of the tax laws had been published, also, by California, and had been obtained by the returns of county clerks in Texas and published by the commissioner of agriculture; in Ohio the secretary of state had published reports of county recorders for a series of years, showing the number of real estate mortgages made, the debt incurred under them, and the number and amount of the cancellations of record; while in Indiana the bureau of statistics had for several years published incomplete reports of the number and amount of the recorded real and chattel mortgages and of the recorded satisfactions. At its annual meeting in 1888 the National Board of Trade requested the Department of State to obtain information in regard to mortgages in foreign countries, and the results of the efforts of the department were published in the "Reports from the Consuls of the United States" for November and December, 1889.

Methods of Investigation

If an undertaking no more difficult than that of discovering the mortgage movement for a series of years had been expected of the Census Office, the method of procedure would not have required much study. The people who had prevailed upon Congress to order the investigation would have been content with nothing short of a determination of the existing debt, and the expectation was that the office would either employ the decennial enumerators for this purpose or would accept the mortgages, judgments, and other recorded evidences of debt remaining uncanceled in the public records as the amount of debt in force. Method at once became the all important problem.[29]

The plan that was finally adopted for application to the whole country was confined to real estate mortgages and had these distinct purposes in view: the mortgage movement during the 10 years 1880–1889 in all counties, by abstracts from the public records, with reference to the number and amount of the mortgages, the area covered, and the rate of interest; the average time during which mortgages survive in all or nearly all counties, the pursuit of inquiries by mail and possibly by other means in as many counties as expense would permit, eventually fixed at 102, for the purpose of ascertaining the existing debt with such success as might be achieved, and of ascertaining the purposes for which the debt had been incurred and the proportion of the partial payments. At the same time it was foreseen that possibly the results derived from these 102 counties might be useful in reducing the errors of computing the existing debt by applying their accurately determined conditions to qualify the computations for the other counties.

The Facts for Which Statistics Were Collected

The census day, or present time, under this investigation is January 1, 1890. For every real estate mortgage made within the 10 years ending December 31, 1889, and recorded, except mortgages made by quasi-public corporations (such as railroad, telegraph, and public water companies), the following facts were taken by special agents: (1) name of the state; (2) name of the county; (3) the year when the mortgage was made; (4) number of lots covered; (5) or, number of acres, if mentioned, if not, then the fact that the mortgage covered a tract of land large enough commonly to be measured in acres; (6) the amount of the debt; (7) the actual rate of interest, or, if

[29] G. K. Holmes and J. S. Lord, *Report on Real Estate Mortgages in the United States*, U. S. Census Office, 11th Census, 1890 (Washington, 1895), 12:3.

not ascertainable from the records, the customary rate at the time; (8) for the mortgages made in 1880–1883 and canceled in the records, the full dates of making and cancellation.

In the 102 counties where special investigations were made the same facts were taken, and, for all uncanceled mortgages as far back in time as any appreciable number of them were found in force, the names of the parties and of the towns where they lived at the time the mortgages were made were taken. In making these abstracts of uncanceled mortgages the period generally covered was 20 years previous to 1890. In some cases it was not necessary to go so far back, in others a longer time was covered experimentally.

Application was then made by mail to all mortgagors named in the uncanceled mortgages to report the amount of debt unpaid, if any, not including interest, and the object for which the indebtedness was incurred. If answers were not returned, application was made by mail to mortgagees, and finally it was necessary to resort to personal canvass. The number of persons who refused to answer these questions upon request in person by special agents was nowhere 1 per cent, and generally was not one in a thousand.[30]

Another separate investigation was also authorized by Congress in an act approved February 22, 1890. This provided that:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be the duty of the Superintendent of Census, in addition to the duties now required of him by law, to ascertain the number of persons who live on and cultivate their own farms, and who live in their own homes, and the number who hire their farms and homes, and the number of farms and homes which are under mortgage, the amount of mortgage debt, and the value of the property mortgaged. He shall also ascertain whether such farms and homes have been mortgaged for the whole or part of the purchase money for the same, or for other purposes, and the rate of interest paid upon mortgage loans.[31]

It was decided that some of the facts should be collected by the enumerators, and fortunately for the success of the work done by the enumerators, the people rarely refused to answer the questions relating to farms and homes, and, had the enumerators always found persons at home who could answer the questions, it is probable that there would have been no qualification to their success. The work of the enumerators thus eliminated from further inquiry all families reported by them to be hiring their farms or homes and all families owning them free of incumbrance. There remained, therefore, for further investigation, the families reported to be owning the farms or homes occupied by them, under incumbrance, and the families for which the reports were incomplete or wanting. In all, the families that remained for further inquiry numbered 2,492,558, or 19.64 per cent of the families of the country.

The next step in the plan of work was to employ the mail, not as the final step, but as the cheapest means of reducing the unknown quantities. To every person reported to be the owner, or, if no owner was reported, to be the head of each of the families remaining for further investigation, a circular was sent, containing a letter explaining the object of the circular, the questions for which answers were wanted, and a series of instructions in regard to the answers. After some experience with this circular, there was found to be too much printed matter upon it, and in its place a slip of paper was

[30] Holmes and Lord, *Real Estate Mortgages*, pp. 5–6.

[31] "Farms and Homes: Proprietorship and Indebtedness," U. S. Census Office, 11th Census, 1890, *Compendium* Part III (Washington, 1897), p. 1056.

used, containing on one side an explanation of the object of the investigation, and on the other side 4 questions with instructions how they should be answered. . . .

After the resources of the mail had been exhausted, special agents were employed to correct the greater deficiencies, outside of the southern states named, except in a considerable number of counties of small population which could be visited by a special agent only at great expense, and in these counties reports were obtained from the officers having charge of the real estate record offices. The special agents were able to obtain the information they were seeking almost entirely by application to debtors and at dwellings. In this way unknown quantities were reduced to proportions which are not regarded as invalidating the conclusions that are made, although returns for all families were very much desired.

In the southern states above named the entire work that was supplementary to that of the enumerators was done by a few special agents, who traveled from county to county and obtained answers to their questions from various county officers — the probate judge, assessor, sheriff, clerk, auditor, treasurer, register, or tax collector. One or more of these officers, in all except the more populous counties of the south, could be relied upon to give trustworthy answers, not only as to whether a family owned its home or farm, but also in regard to the amount of incumbrance, if any, the rate of interest, and the purpose for which the debt was incurred. The reports thus made by county officers are, beyond question, the most trustworthy ones to be had in these states.

The enumerators made no report of incumbrance on farms and homes, and no report of the value, the rate of interest, and the object of the debt. After all resources at command were exhausted there remained 18.35 per cent of the owning families occupying incumbered farms from which information was not obtained in regard to the amount of the incumbrance, value of the farm, rate of interest, and the object of the debt; and the corresponding percentage from home families is 25.98.[32]

The Agitation for Federal Rural Credits Legislation

The gradual upward trend in commodity and farm land prices during the first part of the twentieth century led to increasing demands for more adequate credit facilities for farmers. Commenting on this situation, Thompson stated:

Fundamental changes in American agriculture had been going on for many years prior to the agitation for federal rural credits legislation. The western frontier with its free lands had all but disappeared. Growth of population had led to increasing demands upon existing agricultural areas. The relatively extensive types of farming were rapidly giving way to more intensive systems. Increasing land values called for larger amounts of capital invested in land while the more intensive systems of farming made necessary a large increase in working capital. Coincident with these changes, there was in general a falling off in the actual rate of earnings on capital invested in farms. The returns from capital in the more highly developed agricultural regions were especially low. The fact that the earnings of farm capital did not appear sufficient to pay the prevailing interest rates and commissions called special attention to the inadequacy of existing rural credit facilities.[33]

[32] "Farms and Homes," pp. 1056, 1057, 1058.

[33] C. W. Thompson, "The Federal Farm Loan Act," *The American Economic Review, Supplement* 7:115, (March 1917).

McMillan, writing in the "Farmer and Breeder," stated:

The Three Great Political Parties, the Republican, the Democratic, and the Progressive in the National Conventions of 1912 all adopted Resolutions in Favor of Rural Credits.*

In the presidential campaign of 1912 President Wilson was an ardent supporter of the rural credits movement, and in his inaugural address he said that agriculture is not "afforded the facilities of credit best suited to its practical needs." President Taft during the latter part of his administration signed the agricultural appropriations act, which provided for the appointment of a commission to investigate this subject and make a report at a subsequent session of Congress.[34]

Thompson went on to point out:

In the search for remedial action it was natural that inquiry should be made regarding improvement in rural credit facilities in the older agricultural countries of Europe. Especially significant in this direction was the action taken at the conference of the Southern Commercial Congress at Nashville, Tennessee, in April, 1912, when it was determined to send a representative body from the various states, later known as the American Commission,[35] to investigate the subject in European countries. In March, 1913, President Wilson gave further impetus to this movement by appointing, for a similar purpose, the United States Commission.[36] These two commissions sailed for Europe in April, 1913, and jointly collected a considerable amount of valuable information, which was largely embodied in Senate Documents No. 214, 261, and 380, Sixty-third Congress. Senate Document No. 380 also contained a draft of a proposed rural credit law which was introduced into Congress as the formal recommendation of the commission under the name of the Moss-Fletcher, or Commission, Bill. This bill authorized the establishment under federal supervision of relatively small and independent joint-stock land banks which were intended to make loans direct to farmers on first-mortgage security and issue bonds based on such mortgages as collateral and on their capital stock. As originally proposed, these land banks might be

* It is of great importance to the social and economic welfare of the country that its farmers have facilities for borrowing easily and cheaply the money they need to increase the productivity of their land. It is as important that financial machinery be provided to supply the demands of farmers for credit as it is that the banking and currency systems be reformed in the interest of general business. Therefore we recommend and urge an authoritative investigation of agricultural credit societies and corporations in other countries and the passage of state and federal laws for the establishment and capable supervision of organizations having for their purpose the loaning of funds to farmers. — (Republican Convention, June 22, 1912.)

Of equal importance with the question of currency reform is the question of rural credits or agricultural finance. Therefore, we recommend that an investigation of agricultural credit societies in foreign countries be made, so that it may be ascertained whether a system of rural credits may be devised suitable to conditions in the United States; and we also favor legislation permitting national banks to loan a reasonable proportion of their funds on real-estate security. We recognize the value of vocational education and urge federal appropriations for such training and extension teaching in agriculture, in co-operation with the several states. — (Democratic National Convention, July 2, 1912.)

The development and prosperity of country life are as important to the people who live in the cities as they are to the farmers. Increase or prosperity on the farm will favorably affect the cost of living, and promote the interests of all who dwell in the country, and all who depend upon its products for clothing, shelter, and food. We pledge our party to foster the development of agricultural credit and co-operation, the teaching of agriculture in schools, agriculture-college extension, the use of mechanical power on the farm, and to re-establish the country-life commission, thus bringing the benefits of better farming, better business, and better living within their reach. — (Progressive Party, August 7, 1912.)

[34] H. G. McMillan, "Rural Credits or How To Finance the Farmer," *Farmer and Breeder* pp. 3, 6, (Sioux City, Iowa; March 1, 1916).

[35] The American commission to investigate and study agricultural credit and co-operation.

[36] The United States commission to investigate and study rural credits and agricultural co-operative organizations in European countries.

organized with a minimum capital stock of $10,000, but this minimum was later raised to $100,000.

While information and suggestions were thus being supplied to Congress with the aid of studies conducted in Europe, the Secretary of Agriculture inaugurated an investigation of existing rural credit conditions and facilities in the United States. The results of this investigation were embodied partly in bulletins issued by the Department, partly in the annual reports of the Secretary, and partly in hearings before the Congressional Committees on Banking and Currency. These results were also utilized in informal cooperation with members of these committees.

The Congressional Committees on Banking and Currency conducted extensive hearings on both mortgage and personal farm credit during the years 1913 and 1914 and again in the fall of 1915. As a result of the work of these committees, there was formulated and introduced into Congress what became known as the Hollis-Bulkley, or Committee, Bill. This bill provided for not less than five regional federal land banks, each allotted its own exclusive territory. Farmers desiring loans from such land banks were not to obtain the loans direct, but would be compelled to become members of local farm-loan associations through which the loans would be obtained from the federal land banks. Mainly because of disagreement in Congress with reference to the matter of federal aid in providing rural credit facilities, the whole subject was referred to a joint congressional committee on rural credits in the spring of 1915. This joint committee agreed upon a bill on January 3, 1916, which bill underwent certain changes at the hands of conferees appointed by both houses and was then passed by the House June 27, by the Senate June 28, and was approved by the President July 17, 1916. The present law, as thus enacted, provides for a federal land-bank system embodying the leading features of the Committee Bill and also authorizes joint-stock land banks, conforming in the main to the provisions of the Commission Bill. Inasmuch as recognition is given to these two distinct land-bank systems, the law has sometimes been characterized as a compromise.[37]

The Beginning of Seed Loans

In 1918 the Federal Government initiated its first program of making direct seed loans to farmers. Secretary of Agriculture, D. F. Houston, reported:

Acting upon urgent representations that many wheat growers in certain sections of the West who lost two successive crops by winter killing and drouth had exhausted their resources and might be compelled to forego fall planting and, in some cases, to abandon their homes unless immediate assistance was extended, the President, at my suggestion, on July 27 placed $5,000,000 at the disposal of the Treasury Department and the Department of Agriculture to enable them to furnish aid to that extent. The primary object of this fund was not to stimulate the planting of an increased fall acreage of wheat in the severely affected drouth areas, or even necessarily to secure the planting of a normal acreage, but rather to assist in tiding the farmers over the period of stress, to enable them to remain on their farms, and to plant such acreage as might be deemed wise under all conditions, with a view to increase the food supply of the Nation and to add to the national security and defense. It was distinctly not intended to be used to stimulate the planting of wheat or any other grain where such planting is not wise from an agricultural view and where other crops or activities are safer.

[37] C. W. Thompson, "The Federal Farm Loan Act," pp. 115–17.

The Federal land banks of the districts embracing the affected areas were designated as the financial agents of the Government to make and collect the loans. The cooperation of local banks was sought and secured in the taking of applications and in the temporary financing of farmers pending advances of Federal funds upon approved applications and the execution of necessary papers. . . .

Loans were made only to farmers who, by reason of two successive crop failures resulting from drouth in the community had exhausted their commercial credit. A limit of $3 an acre on not more than 100 acres was fixed. The farmers agreed to use seed and methods approved by the Department. They signed a promissory note for the amount of the loan, with interest at the rate of 6 per cent, payable in the fall of 1919, and executed a mortgage giving the Government a first lien on the crop to be grown on the acreage specified. Furthermore, provision was made for a guarantee fund, each borrower agreeing to contribute 15 cents for each bushel in excess of a yield of 6 bushels per acre planted under the agreement. A maximum contribution of 75 cents per acre was fixed. The object of this fund is to safeguard the Government against loss. If it exceeds the loss it will be refunded pro rata to the contributors.[38]

Early Credit Research of the U.S.D.A.

Probably the first statistical survey on agricultural credit conditions made by the U. S. Department of Agriculture was that conducted in 1912. Holmes reports:

The recent movement to increase the supply of credit to farmers and to reduce their rates of interest has been pushed along with little knowledge of local conditions in country communities throughout the United States, and has been mainly devoted to an examination of European systems for providing rural credit under conditions more or less unlike those existing in the United States. It occurred to [James Wilson] the Secretary of Agriculture last fall that more should be known with regard to local conditions in this country and, by his direction, I had the honor to conduct the investigation.

The schedule of questions was sent to 9,000 persons in all of the rural counties of the United States. There were about 3,000 country bankers, about the same number of prominent farmers, and also about the same number of country merchants and men of other occupations taken from the list in use by the Bureau of Statistics to collect monthly reports of the prices of farm commodities. The whole country was thoroughly covered by the schedule.

The first effort of the inquiry was to ascertain the fraction of the farmers owning their land who are able to give good security or indorsed note for a loan. In the opinion of the correspondents, 77 per cent of the farm owners may be so regarded, and the corresponding percentage for tenants is 46; that is to say, about three-quarters of the farmers owning their land and nearly one-half of the tenants are able to give good security or indorsed note for a loan. The farm owners and tenants unable to do this were then dropped from further consideration.

It was next attempted to ascertain what percentage of the farmers owning their land and able to give good security or indorsed note are unable to obtain needed short-time or accommodation loans and advances because of insufficient opportunities to borrow. It appears that 48 per cent of the

[38] U. S. Department of Agriculture, *Annual Reports*, 1918 (Washington, 1919), pp. 33–34. For further details relative to subsequent seed loan programs based on specific legislation see: N. J. Wall, "Federal Seed-Loan Financing and Its Relation to Agricultural Rehabilitation and Land Use," U.S.D.A., *Technical Bulletin* 539 (Washington, 1936).

correspondents reported that farm owners were able to obtain such loans. The other correspondents reported that 36 per cent of the farm owners in their communities were unable to do so, or about one-sixth of all farm owners.

A similar question pertaining to long-time loans brought reports from 47 per cent of the correspondents that all farm owners were able to obtain such loans. The remaining correspondents reported that 40 per cent of the farm owners were unable to do so, or less than one-fourth of all farm owners. The corresponding percentages for tenants are nearly the same. It is easier to obtain short-time loans than long-time ones.[39]

Commenting on the availability of bank credit, the author states:

The general import of this particular investigation is that there is a very large supply of bank credit available to farmers in states outside of the South and that the amount of this available credit is large as an average for farmers who desire to borrow.[40]

This report presents what is believed to be the first estimate on total debt owed by farmers.

The mortgage debt on the real estate of farms operated by owners has been determined by the census to be $2,293,000,000, including an estimate amounting to about one-fourth of the total.

The most difficult estimate to make is the amount of real estate mortgage debt on farms occupied by tenants. It will not do to apply to this the average mortgage debt on farms operated by owners. The tenant farms are often comparatively small holdings and this is especially so in the case of cotton plantations that have been subdivided into tenancies. There are about 800,000 cotton tenancies and most of these may be eliminated as either being free of debt or as having their debt reported in the statement of the owner for the home part of the plantation. In addition to this there is comparatively little mortgaging of farms and plantations in the cotton states.

A large class of tenant farms that are invariably free from mortgage is composed of farms owned by elderly men who have been farmers for many years and have retired from active life on the farm to live with children or to maintain homes in towns and cities. These farmers are well-to-do men and their farms are free of mortgage. There is an immense number of them. . . .

It seems probable, therefore, that a real estate mortgage debt of $500,000,000 is an ample estimate for the tenant farms and, if so, the maximum debt on all farm real estate is not more than $2,793,000,000. . . .

As a result of the computations that have been made, it seems probable that the amount of the agricultural debt of the farmers of the United States is as great as $5,000,000,000. The debt of agricultural laborers is not included. This, however, is comparatively small.

Upon converting items of debt into percentages of the total, it appears that about 55.9 per cent is represented by real estate mortgages, about 14.0 per cent by chattel mortgages, about 9.0 per cent by liens on crops other than cotton, about 7.8 per cent by cotton crop liens, and about 5.0 per cent by unsecured debts owing to local merchants.

This debt of $5,000,000,000 is not all a demand on the loan market within one year, nor during any period of years. The bulk of the mortgages to secure farm purchase money, the unsecured running accounts with country

[39] G. K. Holmes, "Rural Credit," *Business America* p. 121, (February 1913).
[40] Holmes, "Rural Credit," p. 123.

merchants, and some of the rest of the indebtedness is not such a demand. The amount of this debt is about one-half of the total.[41]

The first step in developing organized research in agricultural credit within the Department of Agriculture occurred in 1913 when Thomas Nixon Carver of Harvard University was appointed as Director of the Rural Organization Service.

Shortly after the arrival of Carver, C. W. Thompson of the University of Minnesota was brought into the Office of Markets and Rural Organization as "Specialist in Rural Organization." He initiated a comprehensive program to obtain a detailed picture of the volume, terms, and conditions of credit used by farmers.

The first recorded report of the results of this study appears in the *Hearings* before the subcommittee of the Committee on Banking and Currency, House of Representatives "Charged With Plans for the Development of Rural Credits in the United States." Carver and Thompson appeared before this Committee on December 3 and 4, 1913. In these hearings, Thompson outlined the procedure:

> We wanted to try to get an inventory, if we could, first of all, of loan conditions of both short and long time loans in different sections of the country, and we thought our results would be more valuable if we adopted different methods of getting at the information so as to have some methods serve as a check upon others.
>
> Our first line of inquiry was through a questionnaire sent out to five or more farmers in every county of the United States. Care was taken at the outset to select representative farmers distributed in each of these counties, and in order to do this we got the list through the aid of the agricultural colleges of the various States. Returns have come in very well from this questionnaire, and they have all been compiled by counties and then by districts and then by States. . . .
>
> Then we have adopted other lines of inquiry. One of the things we did at the outset was to secure the cooperation of a number of men located in agricultural colleges in different parts of the United States. These men are usually trained economists, teachers of economics in their respective institutions. We were in a position to offer them the franking privilege and an allowance for traveling expenses, and then we sent to each of these men outlines showing the items under which we wished they would gather information. We addressed them letters from time to time explaining what we had in mind under each of the items we had sent to them. . . .
>
> Our inquiry covers other things than this. For instance, we have been conferring with all of the leading insurance companies of the United States, both life and fire insurance, and we have asked them to give us their confidential statement of the amount and the geographical distribution, showing amounts in each State in the Union of their farm mortgages. We have taken all of the returns and the answers we have here are from 15 leading insurance companies. We have answers from a great many more, but their answers show, with few exceptions, that they do not hold any farm mortgages. At least if they have any they say it is not worth mentioning. We took the returns from all of these insurance companies and divided them by States, so as to show how much of the money from the 15 companies was in Iowa, how much in Michigan, how much in Texas, and so on. Then we prepared a map which shows the percentage of the total amount of farm mortgages held

[41] Holmes, "Rural Credit," pp. 124–25.

by all of those 15 companies distributed in each of the various States. I will discuss that a little later, but that is one line of information which we have sought.

Then we have conferred with building and loan associations through their national secretary — that is, the secretary of the United States League of Building and Loan Associations — and through State associations and a number of local associations for the purpose of finding out the farm-mortgage business done by such associations. We can present some statement regarding that, but perhaps it should be deferred until later. I will just outline first the things we have been trying to do.

We have also looked into the State loans, where such exist, to see what importance, from the standpoint of amount, may be attached to State loans to farmers on farm mortgages. . . .

Yes. I ought to add, if I may go back, in order to complete the statement I have just made, that our correspondence was also carried on with a great many mortgage companies and real estate firms scattered throughout the country, for the purpose of getting their statement, and we have that. And our men have conferred with all parties involved in this study.[42]

Tables were presented showing unweighted averages of rates of interest on long- and short-time loans by crop-reporting districts, and state summaries of rate of interest on mortgage loans; percentage mortgage loans bear to security value; rates of interest on short-time loans and interest paid on bank deposits; and the geographical distribution of farm-mortgage loans of 18 life insurance companies.

Two years later, the results of the Thompson study which had been presented previously in a preliminary form were released as finished results of the investigation. The data were presented by Secretary of Agriculture David F. Houston and Thompson at the hearings before the subcommittee of the Joint Committee on Rural Credits, Sixty-Fourth Congress, first session. Appearing on November 13, 1915, Secretary Houston presented, by states, data on estimated total farm-mortgage debt, with a breakdown showing amounts of farm mortgages held by insurance companies and by banks, the amount of mortgage loans "handled" by banks, and the amount of personal and collateral loans by banks to farmers. Detailed data on interest rates were also presented showing average annual rates for both interest and commission charges as well as average term for farm-mortgage loans. For short-time loans average interest rate, average total cost, and average term were shown classified as to loans based on personal security and on collateral security.

The data presented by Thompson before the congressional hearings were later summarized in two studies entitled "Costs and Sources of Farm-Mortgage Loans in the United States" and "Factors Affecting Interest Rates and Other Charges on Short-Time Farm Loans." In the former study Thompson concluded:

The practice of drawing on outside capital for farm-mortgage loans is found, as has been stated, both in the most highly developed agricultural

[42] C. W. Thompson, Statement on "Rural Credits" in *Hearings* before the subcommittee of the Committee on Banking and Currency, House of Representatives, December 3 and 4, 1913 (Washington, 1913), Part I, pp. 5, 6, 7, 8, 9.

sections of the corn belt and in the relatively less developed agricultural regions of the South and West. The general need for suitable facilities through which outside capital may reach the farmers in different parts of the country is therefore clear. In the United States it is a fairly well established practice for country banks or real estate firms to act as local agents or correspondents for outside or distant investors, either direct or through other middle men. It is also the usual practice to market the farmer's mortgage note in its original form. This makes it necessary to find a purchaser who wants a mortgage of a given amount, running for a given time, and with given terms. Obviously, paper of this character will not sell as readily in the open market as standardized securities. Distant investors are not generally in a position to have first-hand knowledge of the farm security underlying a given mortgage note. Moreover, they often prefer securities running in even amounts for uniform periods of time and with a convenient means of collecting the interest. Many investors prefer to be relieved of all concern as to the keeping up of the underlying security.

All these advantages are secured where the mortgage notes, instead of being marketed direct, are held as a collateral trust fund, and bond issues based thereon are placed on the market. To meet these requirements, institutions are needed, both to fix reliable and suitable standards for farm-mortgage loans, and to market them in the form of bonds. Such institutions can not be properly established without suitable safeguards. It is necessary to profit by the lessons of past American experience, and avoid the mistakes made by the debenture institutions in this country in the eighties and early nineties. The almost complete failure of the farm-mortgage debenture business in 1893 affords ample warning. There is need to take stock of all the factors that contributed to that failure. The granting of loans out of proportion to protection funds, the failure to build up adequate reserves, the basing of loans on boom estimates of land values, the extension of loans on lands of uncertain returns, the substitution of inferior for standard collateral securities, the utter lack of inspection and supervision under State or Federal law — these practices quite naturally led to disaster. As a result there was an almost complete collapse of these early debenture companies.

Being given a properly organized credit system, it is believed that the farmer who adopts business methods in his farming and thus shows himself worthy of credit will have adequate opportunity to secure it on reasonable terms. The farmers' need in connection with mortgage credit is to obtain investment capital for relatively long periods of time, on suitable terms of repayment, and at the lowest cost consistent with business policy. A properly organized system should supply this need, and, under suitable Federal regulation and control, should protect the farmer against the unreasonable charges now prevailing in many localities.[43]

In the latter report the author points out:

There are wide variations in the interest rates and other charges paid on short-time loans by farmers in different sections of the United States. . . .

No simple explanation will account adequately for these variations between one State or district and another. While some of the factors involved are essentially natural conditions and are not readily subject to change, others have been brought about primarily by human agencies and may be modified considerably through voluntary action. It is realized that any improvement in the farm-loan situation must be secured mainly through the modification of

[43] C. W. Thompson, "Costs and Sources of Farm-Mortgage Loans in the United States," U.S.D.A., *Bulletin* 384 (Washington, 1916), pp. 14–15, 16.

conditions controlled by human agencies. Therefore, while some attention should be given to natural conditions in order to show their importance as factors affecting interest rates and other charges on short-time loans, the purpose of this discussion is primarily to show some of the ways in which conditions actually are being modified so as to enable the farmer to obtain better terms.

Existing banking methods and practices as related to farm loans are often criticized by reason of the unwillingness or inability of certain bankers to carry over farm loans until the farmer is prepared to meet his obligations. Complaint is often heard of cases where a banker, with a little extra effort, could make arrangements to carry over the loan of some farmer patron, but where in fact an apparent indifference to the welfare of the farmer is shown. It is interesting to learn, however, that many bankers manifest exactly the opposite attitude, and use every resource at their command, including such assistance as they can obtain at larger financial centers, in order to carry over their farmer patrons until such time as payment on loans can be made conveniently.

Where banks are active in developing farm-loan business they realize the importance of understanding the requirements of safe and progressive agriculture and also the importance of educational work among farmers in the interest of improved agriculture. Such knowledge gives the banker a better understanding of the merits of farm loans and at the same time tends to raise the standard of farm-loan paper. These considerations not only make possible a safer and larger loan business for the banker but also lead to a decrease in the interest rates paid by the farmer.[44]

Meanwhile some studies of a general nature had been completed. The first of these publications was Carver's "How To Use Farm Credit." A note stated: "This bulletin is intended to help farmers with the business side of their enterprises and is suitable for all sections of the country."[45] The publication contained Carver's much quoted statement:

> There is no magic about credit. It is a powerful agency for good in the hands of those who know how to use it. So is a buzz saw. They are about equally dangerous in the hands of those who do not understand them. Speaking broadly, there are probably almost as many farmers in this country who are suffering from too much as from too little credit. Many a farmer would be better off to-day if he had never had a chance to borrow money at all, or go into debt for the things which he bought. However, that is no reason why those farmers who do know how to use credit should not have it.[46]

The second general study bore the title "How Farmers May Improve Their Personal Credit." A note said:

> This bulletin is intended to give to farmers some practical methods for improving their personal credit through cooperation. It should be of interest to farmers generally, and particularly to those of the South and of the West.[47]

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[44] C. W. Thompson, "Factors Affecting Interest Rates and Other Charges on Short-Time Farm Loans," U.S.D.A., *Bulletin* 409 (Washington, 1916), pp. 1, 2, 12.

[45] T. N. Carver, "How To Use Farm Credit," U.S.D.A., *Farmers' Bulletin* 593 (Washington, 1914), p. 1.

[46] Carver, "How To Use Farm Credit," p. 1.

[47] C. W. Thompson, "How Farmers May Improve Their Personal Credit," U.S.D.A., *Farmers' Bulletin* 654 (Washington, 1915), p. 1.

The report further stated:

> . . . two general methods whereby farmers may improve their personal credit will be considered: That of temporary agreements with existing loan agencies, agreements terminating with the payment of the loans, and that of permanent articles of agreement among the farmers themselves, or "cooperative credit associations."[48]

A third report, by Leon E. Truesdell and C. W. Thompson, bore the title of "Amortization Methods for Farm Mortgage Loans."[49] In a footnote the authors stated:

> This circular explains a simple method of computing amortization tables for use in connection with farm mortgage loans, gives specimen tables constructed in accordance with this method, and shows, for comparison, tables computed by other methods. It should be of interest to all farmers who are contemplating the borrowing of money to be repaid on the amortization plan, as well as to others who are concerned with the problems of farm mortgage credit.

The passage of the Federal Farm Loan Act on July 17, 1916, providing for the establishment of 12 federal land banks and authorizing the chartering of private capitalized joint-stock land banks, marked the first significant legislative development in making available specialized credit facilities for agriculture in the United States. To help farmers to become more fully acquainted with these new facilities, Thompson issued an additional publication "How the Federal Farm Loan Act Benefits the Farmer." In this study the author outlined the disadvantages of then existing facilities for obtaining farm-mortgage loans and how the new system would bring about an improvement. The methods of operation of the land banks were outlined and instructions given for forming national farm-loan associations. The inter-relation of the new credit system to the Department of Agriculture was described:

> While the Federal Farm Loan Board of the Treasury Department has charge of the administration of the law and will conduct investigations and diffuse information with reference thereto, the Department of Agriculture, through the Office of Markets and Rural Organization, which has conducted extensive investigations in matters pertaining to farm credits, will cooperate with the Federal board in supplying information and rendering assistance to farmers who desire to take advantage of the Federal Farm Loan Act, especially with reference to the organization of local loan associations. Section 3 of the law specifically provides for the use of the Department of Agriculture as a distributing agency for information regarding the Federal Farm Loan Act. Various agencies of the department, including the extension workers in the several States, will be utilized in this work.[50]

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[48] Thompson, "How Farmers May Improve Their Personal Credit," p. 1.
[49] L. E. Truesdell and C. W. Thompson, "Amortization Methods for Farm Mortgage Loans," U.S.D.A., Office of the Secretary *Circular* 60 (Washington, 1916), p. 1.
[50] C. W. Thompson, "How the Federal Farm Loan Act Benefits the Farmer," U.S.D.A., *Farmers' Bulletin* 792 (Washington, 1917), p. 12.

Early Credit Studies by States and Others

NORTH DAKOTA

One of the first state studies of agricultural credit was made in North Dakota. This was summarized in the *American Economic Review* for September, 1913, in which Jacobstein wrote:

In view of the ever-increasing demand for improved rural credit facilities, an analysis of conditions in a single state should be of interest. In a recent series of newspaper articles, the writer urged the farmers of North Dakota to organize some form of coöperative credit as a means of lowering the interest rate on borrowed capital. Bankers immediately raised protests, declaring that rates were not too high; that seemingly high rates in certain localities were due to local conditions; and finally that these local conditions could not be eliminated by the inauguration of any new credit system. The controversy had not proceeded far when it became apparent that no agreement could be reached on the fundamental question of reform until two questions were answered: (1) What is the prevailing rate of interest? (2) To what extent is the rate affected by local conditions?

An investigation covering the above questions followed, the results of which are here set forth. . . .

Again, one must keep clearly in mind two types of loans, the long-time loan and the short-time loan. The former is for permanent investment purposes, such as buying new land, improving old land, erecting buildings, or purchasing expensive machinery. The short-time loan is used for purchasing inexpensive machinery, provisions, etc., and is used to tide the borrower over until the next harvest. The former loan averages about $1500 to $2500, and runs for about five years; the latter varies from $100 to $500, and runs anywhere from three months to one year. . . .

By means of questionnaires sent to bankers, implement dealers, and farmers, information was secured concerning both types of loans. Fortunately the data secured are sufficiently extensive to admit of reasonably safe conclusions for the entire state.[51]

These replies show that the average farm mortgage runs for 4.94 years; and that the average interest rate is approximately 8 per cent (accurately 7.88 per cent). This 8 per cent does not include the expense of abstracting titles, examining the property, and the recording of the mortgage. These fees are invariably paid by the borrower. Nor does this interest rate of 8 per cent take account of the bonus that is frequently exacted, in the newer regions, from the borrower for the privilege of securing a loan; nor does it allow for the sum the borrower loses in paying his yearly interest in advance, which is deducted from the principal. In one county, for instance, a farmer had to pay a bonus of $50 for borrowing $1000 at 10 per cent interest. The farmer secured $850, since $100 was deducted as interest on the $1000 and $50 was deducted as a bonus. In this case the actual interest was considerably higher than the nominal interest rate of 10 per cent. While the practice of exacting a bonus is not common, it is generally the custom to deduct the entire year's interest in advance; assuming an 8 per cent rate, the farmer therefore pays $80 interest not on $1000 but on $920, which brings the rate up to 8.7 per cent.

Short-time loans are of two kinds, bank loans and book credit advanced

[51] M. Jacobstein, "Farm Credit in a Northwestern State," *American Economic Review* 3:598–605 (September 1913). A somewhat similar, but more restricted, study for Illinois appeared in the following year: C. L. Stewart, *Analysis of an Investigation of Rural Banking Conditions in Illinois,* Illinois Bankers Association (Champaign, Ill.; February 12, 1914). (At the request of the Committee on Agriculture.)

by retail stores. The bank loan is made on the farmer's note, generally unsecured, though often secured by a chattel mortgage. According to the reports received from 125 banks, the average length of time for these short-time loans is 8.5 months; and the average rate of interest is 10.75 per cent. . . .

It is quite common for the dealer to obtain a note from the farmer – the note generally bearing a 10 per cent interest rate from the date of issue. Often, however, the note does not begin to bear interest until the farmer has failed to make payment at the expected time, that is, immediately following the harvesting season. The 54 implement and hardware dealers reported an average of 10.26 per cent interest per year on these notes.[52]

In conclusion, Jacobstein said:

Allowing, however, for all these local conditions – the great demand for capital in a new and developing country, the inability to attract sufficient outside capital because of the risky character of investments, the irresponsible character of some elements in the population, the character of farming methods, the commission agent, and the legal restrictions handicapping banks – allowing for all these conditions, and because of some of them, it is believed that the farmers by organizing coöperative credit associations could reduce the rate of interest on both long and short-time loans; and, furthermore, that such coöperative credit facilities would be a means of improving the methods of farming, would encourage stability in population, and would make the farmer feel that he is not being discriminated against in the borrowing and employment of capital.[53]

WISCONSIN

One of the first detailed area studies of farm-credit conditions was made in Wisconsin in 1914. In outlining the scope of the study, Hibbard and Robotka stated:

The widespread interest in the subject of farm indebtedness suggested a study of the facts in Wisconsin as they now stand. For this study two areas were chosen, Dane County in the southern part of the state, representing the older and relatively stable conditions, and Rusk County, and in part Douglas County, in the northern part of the state, representing the newer and unsettled conditions. Certain general facts pertaining to the state as a whole are presented.

The plan has been to find, so far as possible, the amount and the nature of all indebtedness now existing, and furthermore the situation with respect to the opportunities and demands for the further use of credit. To this end a complete search has been made of county records of mortgages and land contracts, and in some cases much use has been made of the information contained in abstracter's books. Other facts concerning mortgages, not obtainable from official records, have in large part been learned from men dealing in farm loans, such, for example, as trust and loan companies and bankers. Information on bank credit has been obtained in most cases directly from the bankers. Other personal credit facts have been gathered mainly from merchants. Finally, a considerable number of farmers in Dane County and a still larger number in the northern part of the state were visited and facts and views obtained at first hand.

In connection with agricultural credit discussion two questions are frequently asked: (1) Why do farmers need credit? (2) Are they more in

[52] Jacobstein, "Farm Credit in a Northwestern State," pp. 599, 600–01, 602.
[53] Jacobstein, "Farm Credit in a Northwestern State," p. 605.

need of credit than are other classes of people? To the first question the answer is simple and easy. Farmers need credit because many of them are capable of handling more capital than they own. This is true of many farmers throughout their lives. In more cases the need of credit is to enable a young farmer to gain possession of a farm. The present high prices of land and other farm property necessitate the investment of more money in a farm and its equipment than most young men have, or than they could hope to earn as laborers in a long term of years. If they are to begin even as tenants it usually means that they begin largely on credit. In answer to the second question it may be said farmers are probably no more in need of credit than are very many other people. It may even be the case that they have as good facilities for using their credit now as have these other classes. Be that as it may there is abundant evidence that the farm credit system needs improvement.[54]

In addition to presenting comparative data for the two areas on terms and conditions of mortgage loans, bank credit, and store credit, the report includes several references to special plans for improving credit services to farmers. The first of these deals with land mortgage associations:

During the spring of 1913 the Legislature of Wisconsin passed an act authorizing the incorporation of credit associations for loaning money to farmers on long-time mortgage credit. Such companies may be formed by not fewer than fifteen adult freeholders of the state. The capital stock shall be not less than $10,000, divided into shares of $100 each.

These associations are given power to lend money to farmers on first-mortgage security. The amount loaned on a given tract of land may equal 65 per cent of its values if improved, and not over 40 per cent where unimproved. Using the mortgages as security, the association may issue and sell bonds, thus receiving the capital first invested in the mortgages. By using the proceeds of the bonds as a revolving fund, the association may go on with the process until the outstanding bonds are twenty times the capital and surplus. Among other provisions all mortgages on agricultural lands shall contain (1) provisions for soil conservation and (2) provisions for the semi-annual, or annual, reduction of the principal. The payments are to be on the amortization plan, and shall be not less than one per cent of the original amount per annum in addition to the interest. The association is to conduct the business out of an income not to exceed one per cent interest payment on loans. However, the importance of this restriction is greatly lessened by the fact that no provision of the law prevents the charging of interest rates higher than that received on the bonds plus one per cent for expenses.

The first purpose of these associations is to give greater currency to funds available for farm loans. There is much money seeking investment in the southern part of Wisconsin, for example, and much money wanted on land mortgage security in the northern part of the state. It is the expectation that the bonds issued by these associations will find sale in the more populous and wealthy centers and thus furnish money for the places where it is needed. The bonds have several advantages over mortgages as marketable securities. The denomination of the bonds is as convenient as possible and the purchaser may buy any number of hundred dollar bonds he wants. Mortgages of course are large or small but they are not on hand in limitless quantities

[54] B. H. Hibbard and F. Robotka, "Farm Credit in Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 247 (Madison, 1915), pp. 3–4.

and it is necessary to dispose of them about as they come in. Hence, the amount taken by a given purchaser must be made up from the miscellaneous denominations which are available at a given time. A large company has less trouble with details of this kind than has a small company. . . .

From the standpoint of the farmer borrowing through these associations the first great advantage is long time, ten or twenty years. The second is a favorable rate of interest. This does not mean a low rate, but where well administered a rate which represents the current interest of the wealthy districts plus one or two per cent instead of two or three per cent as is now frequently the case. Again, the farmer has the advantage of payments on the amortization plan. This is at once a privilege and a stimulus. It is a privilege because he cannot hope to make large annual payments. It is a stimulus because he does not always make any payments at all, even where it might possibly be done, in the case of mortgages running for a period of years and falling due in a lump sum.

At the present time there are two land mortgage associations in operation in the state. One of these is at Eau Claire, the other at Marinette. The bonds of each of these companies have sold readily within the state. In each case the rate of interest for the issue is 5 per cent. . . .

Somewhat similar to the land-mortgage associations are some recently organized associations among bankers having for their object the greater currency of farm mortgages within the state. The plan of these companies is to facilitate the sale of mortgages on lands especially in northern Wisconsin to investors in southern Wisconsin. This will be done it is expected, by reducing the inspection costs. A committee will make the inspections in a more economical manner by doing it on a larger scale, that is, by inspecting many farms on one well-planned trip. It is the intention to buy mortgages bearing 6 per cent interest and issue against them as security debenture bonds bearing 5 per cent interest. In this way the same interest rate may be secured as through the land mortgage associations, but the length of time for which the loans are made is not so long, and no amortization payments are provided.[55]

A plan for providing dairymen with credit on terms better suited to their needs is described:

A type of farm credit which seems to be indigenous in Wisconsin has met with success, and is spreading surely if not rapidly. This is the so-called Ashland dairy plan. It apparently had its beginning at Iron River. The Wisconsin State Bank of that place, in the spring of 1913, purchased some high-class cows and sold them to farmers with the requirement that one-half of the monthly cream check received by the farmer from the product of the cow was to be paid to the bank on the debt. Interest was charged at the rate of 6 per cent. The plan was looked upon as a success even before it had a chance to prove itself, and was put into practice in several other localities. Several modifications were made in the method of providing the money for the project at Ashland and the elaborated program has become known as the Ashland dairy plan.

The essentials of this form of credit are mainly these: The business men of the town sign an agreement to make good any losses which the bankers may sustain in providing the money for buying cows and selling them again to farmers on credit. The sums guaranteed by each man are not large, ranging from $25 to $100 in most instances. Enough such names are secured

[55] Hibbard and Robotka, "Wisconsin," pp. 27–28, 30, 31.

to aggregate from $1,000 to $5,000. Farmers wishing cows sign applications containing certain information.

Two men acting as trustees for the banks pass on the applications and supervise the purchase of the cows. In nearly all instances the assistance of the College of Agriculture has been secured in making selections of cows. In some cases the U. S. Department of Agriculture has furnished a man for the same purpose. During 1913 five carloads of grade Guernseys and Holsteins were purchased and delivered to the farmers in the vicinity of Ashland. Payments from the farmers have been prompt and cheerful.

A modification of the Ashland plan has been adopted at Superior. The initiative was taken by the Rotary Club, and was supported by the business men of the town, as in Ashland. Three trustees were chosen and these men formed an incorporated company called the Superior Rural Development Association. They give notes to the banks for the money needed for the purchase of cows and in turn take notes and chattel mortgages from the farmers who make the purchases. The applications for cows are passed upon with care. Payments are made at the rate of $3 or more if desired, per month in all cases. The farmer pays 7 per cent interest on all deferred payments, 6 per cent going to the bank and 1 per cent to the association for the defrayment of expenses. Thus a cow costing $111 — the average of the first shipment — would be paid for at that rate in 37 months, or a little over three years.

Another unique feature of the Superior plan is the addition of $2.00 per head as an insurance fund to the cost of each cow. This has worked well. For example, one man drew two cows neither of which proved to be desirable. The Development Association does not wish to treat these cases in the ordinary business manner, letting the purchaser stand the whole loss. Satisfying themselves that the fault was not with the farmer in this case, they appraised the loss and made it good out of the insurance fund. It is the belief of the president of the association that the $2.00 assessment is not large enough.

It is the intention of the Superior association to make occasional rounds of inspection to see the farmers and the cows. This will enable them to act intelligently respecting any subsequent application by the farmers for more cows, as well as in the matter of a possible foreclosure of the mortgage in case of failure on the part of the farmer to live up to his contract.

An interesting fact in connection with this movement in the different cities is that the idea of enterprise of this kind originated with the bankers and business men, the farmers responding to the proposals.

No more promising development in farm credit has taken place in recent years. It is fitted to the needs of the farmers and of the communities. It is at a rate of interest, while not low, which the farmer can afford to pay, yet it is not on a philanthropic basis from the standpoint of the lender. The length of time for which the loans are made is adjusted very exactly to the nature of the loan from the borrower's point of view; he can make the greater share of the amount out of the investment. Furthermore, the individual borrower is protected, perhaps more than he realizes against bad bargains by the judgment of his friends and fellows. The cows are selected by a committee presumably of good judgment; they are of well-known breeds. The community action through the choice of a small number of breeds, the use of pure-bred sires, and development of enthusiasm and pride will become known as a center for these breeds and so increase current profits and eventual sales of breeding stock.[56]

[56] Hibbard and Robotka, "Wisconsin," pp. 41–44.

The authors came to the conclusion that:

The investigations made show the need for personal credit to be more acute than that for land credit. It is easy to get land credit equal to 50 per cent of the land value, but the temptation is great for the farmer to tie nearly his entire wealth in land, leaving himself little or nothing for operating capital. Being heavily in debt on his land cripples his personal credit, but he is usually worthy of personal credit. In fact, he can get it for very short periods of time. What he needs is credit extending over a period corresponding to the length of time required to bring to fruition the project for which the loan is made. In the case of dairy cows this period is one of a few years, perhaps two or three. For many farm operations it is nine months or a year, and the usual 90 or 120 days at the bank is too short. In the northern part of the state the testimony is almost universal that bank loans are inadequate because of the short time allowed.[57]

In a study of the "Credit Needs of Settlers in Upper Wisconsin" Ely, Hibbard, and Cox stated:

Farm development in a cut-over region consists of two fairly distinct processes. The first is the pioneering stage, which is devoted primarily to getting located on the land and to preparing the land for effective agricultural use. It is primarily a spending process, and the returns on labor and capital appear largely in increased land values. The second stage is devoted to farm improvement, especially in the way of making permanent buildings, accumulating working capital, and development of markets. Credit needs are more pressing in the first period than in the second, and are harder to provide. In the second period such needs are larger, but are on a much better basis.[58]

They also pointed out that:

The settler's labor and capital during the pioneering stage of farm making is devoted to the erection of more or less temporary buildings, to land clearing, and to obtaining foundation stock for his herds.

The settler needs $1,000 to $1,500 in capital, or in capital and credit, to make normal progress through the pioneering stage. He must expect to carry most of this money credit into the new settlement with him, or be helped to it by the colonization company.

The development stage requires an available capital of at least $2,500. In this period comes the erection of permanent buildings, the breeding of a good dairy herd, and the accumulation of farm machinery. The farmer and the farm ought to be sufficient basis for the credit needed. . . .

The settler with some money is served by the present agencies of credit, real estate companies, chattel mortgage credit, bank credits of various kinds, and different short-time credits.

No credit machinery is now provided that can serve the less well-to-do settler. It is generally agreed that most of the failures in this class of settlers are due to financial difficulties.

The great object should be not to subsidize the farmer but to make his security as mobile as that of the merchant or manufacturer. A few states which have the problem of credit needs of settlers are adopting heroic measures to meet the needs.[59]

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[57] Hibbard and Robotka, "Wisconsin," p. 55.

[58] R. T. Ely, B. H. Hibbard, and A. B. Cox, "Credit Needs of Settlers in Upper Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 318 (Madison, 1920), p. 3.

[59] Ely, *et al.*, "Credit Needs," p. 2.

The development of specialized institutions for livestock financing[60] was reported by Ebersole in a note in the *Journal of Political Economy*. The author stated:

> The cattle loan company, commonly referred to as "cattle bank," is a middleman between borrowing cattle-owners and lending bank-managers. Its business methods and forms closely parallel those of real estate mortgage loan companies except for the fact that cattle loans are of shorter duration and secured by mortgages of the chattel variety. Cattle loan companies, incorporated under state charters, have been operating in such cities as Fort Worth, Denver, East St. Louis, St. Joseph, Portland, South St. Paul, Omaha (2), and Kansas City (3), some of them for over twelve years; and one is now being organized in Chicago. These companies have a paid-in capital stock ranging from $50,000 to $300,000, and are usually closely affiliated with a national or state bank, as are trust companies in the larger cities. . . .
>
> To secure a buyer for the note and mortgage is the second primary function of the cattle loan company. If the loan is a small one, usually $10,000, it may be sold entire, the chattel mortgage assigned and the note indorsed to the buyer. If the loan is a large one, of $50,000, to $100,000, it is necessary to subdivide it in order to provide a ready sale. The mortgage and note are assigned in parts of $5,000, $20,000, or other denominations, to suit the convenience of the buyers of the paper. In this case the assigned parts, since they are indorsed by the loan company, are equivalent to a "debenture" issue secured by a pledge of specified assets held by the company for the protection of the note-holders. The size of mortgage loan most frequently made is $10,000, while loans of $100,000 are exceptional.[61]

TEXAS

In 1915, a study of agricultural-credit conditions in Texas was made. In reporting on his findings, Peteet stated:

> The price paid by the average Texas farmer for credit with which to grow a crop is almost unbelievably high. It varies from 10 per cent to more than 60 per cent according to the standing of the debtor, the system of farming, geographical location and competition between lenders. It is highest in the small farm districts of East Texas and lowest in the cattle and wheat regions of West Texas. It varies widely, however, in each of these regions. The trucker and dairy farmer of East Texas pay less for credit than the all-cotton farmer, and the all-wheat farmer of the West pays more than the farmer-stockman of the same region. The maximum price is paid by the all-cotton tenant farmer who gives a mortgage on his livestock and growing crop for security and the minimum price is paid by the land owner who practices diversification and borrows from banks on his own unsecured note. Competition between banks and credit merchants and between cash stores and credit stores for the farmers' business is a regulating factor of prime importance.
>
> To correctly understand what follows, an explanation of the method employed in collecting the data here presented and the bases of calculation used is necessary. The writer spent several months traveling through the counties named herein, and personally interviewed about 300 farmers, merchants and bankers. A special effort was made to ascertain the financial con-

[60] Subsequent studies dealing with this subject include C. S. Cole, "Cattle Loans and Their Value to Investors," U.S.D.A., *Yearbook*, 1918 (Washington, 1919), pp. 101–08; "Cattle Loan Companies," *Federal Reserve Bulletin* 8:1171–76, (October 1922); and F. M. Larmer, *Financing the Livestock Industry* (New York: The Macmillan Company, 1926), p. 327.

[61] J. F. Ebersole, "Cattle Loan Banks," *Journal of Political Economy* 22:577–78, (June 1914).

dition of the average farmer, and to that end the investigator stopped at farm houses at random as he traveled along the public highways. In those counties more intensively investigated, every section of the county was visited. In practically no instance was the name or condition of the farmer known in advance of a visit. No lists of leading farmers were accepted from any source. To the contrary, every effort was made to "take them as they came" in order that an average of the conditions and opinions of those interviewed might be a true average of the entire community or region. From one to three hours were given to each interview and an effort was made to obtain not only the facts regarding each farmer's business and financial condition, but his frank opinion of his own problems and his state of mind with reference to such matters as credit, tenancy, home-acquirement and the various agencies that are striving to improve rural conditions.

In those counties where a special study of the crop mortgage credit system was made, farmers were asked the prices they paid for staple articles of food and feed and these prices were compared with cash prices in the market towns. Each farmer was asked also to estimate the difference between cash and credit prices in his community. It is a striking testimonial of the accuracy of farmers' judgment that the difference between an average of such estimates and an average of actual cash and credit prices was so slight as to be negligible. Thus, an average of the estimates of 26 farmers of Smith county was 57.1 per cent, while actual cash and credit prices differed 55.3 per cent, a variation between public opinion and fact of only 1.8 per cent. In Rains county the variation was only .9 of one per cent and in Van Zandt county it was 1.1 per cent. This demonstration of the accuracy of farmers' estimates of the cost of credit confirms the experience of investigators of the Office of Farm Management of the U. S. Department of Agriculture, who have found the variation between average estimates and actual records so small as to be negligible.[62]

Detailed comparisons, for a range of individual commodities, of cash and credit prices were presented. In commenting on the influence of bank loans on credit prices, the author concluded:

The influence of the attitude of bankers on short time loans to farmers in these three counties is reflected in the volume of store credit and the range of credit prices. Thus, in Smith county, where previous to 1916 comparatively few farmers obtained short time credit through banks, the volume of store credit was large and credit prices correspondingly high. In Rains county, the banks eagerly sought the farmers' business and although interest rates on such loans were extremely high, more than half the short time farm credit of the county was obtained from banks, and credit prices were lower than in Smith county.

In Van Zandt county, where the bankers, as a rule, loaned money to farmers more freely than in Smith county and at interest rates lower than in Rains, the volume of store credit was less and credit prices lower than in either Smith or Rains.

An extensive inquiry in the north central tier of counties revealed the fact that in most communities bank credit has almost entirely taken the place of store credit for farmers, although here and there throughout this region an old and well established credit merchant continues to sell on "fall time" at prices ranging from 10 to 15 per cent above cash prices.

In the central tier, embracing the counties of Ellis, Hill and McLennan,

[62] W. Peteet, "Farming Credit in Texas," Texas Agricultural and Mechanical College *Bulletin* B–34 (College Station, 1917), pp. 5–6.

the store credit system is slightly more extensive than in the northern tier and credit prices are somewhat higher.

In the Western and North-western regions of the State the credit systems and the crop mortgage appeared to have been introduced along with the culture of cotton and farm tenancy, but is rapidly disappearing as a result of the competition of banks and cash stores.[63]

A large part of the report is devoted to reporting for 249 individuals the answers to a set of formal questions dealing with "facts and opinions concerning rural conditions in Texas."

In a concluding section at the end of the report, Clarence Ousley, Director of Extension Service, made this statement:

> A study of credit farming in Texas makes it perfectly plain as already intimated in this bulletin, that either one-crop farming is the cause of high-priced credit, or high-priced credit is the cause of one-crop farming. Perhaps each is part cause and part effect. Looking backward to the period immediately following the War Between the States, Southern agricultural practices prevailing for the last fifty years find their origin in the fact that the Southern farmer's only source of credit when he returned from battle was the cotton crop he intended to plant, for cotton was then the only recognized money crop. Hence the crop mortgage, which has been the process of securing credit in the spring to make a crop to pay the debt in the fall. The process has been repeated year after year until it has become a habit, and habits of business, like habits of persons, soon become second nature. The mind of the debtor farmer and the mind of the credit banker or merchant alike has been fixed upon the single thought of obtaining credit to farm and farming to pay debt. Both have lost sight of real credit values and farm economics.
>
> The usual formula for a crop mortgage negotiation has been about as follows:
>
> *Farmer*: I would like for you to "run me" this year.
> *Creditor*: How much cotton are you going to plant?
> *Farmer*: So many acres.
> *Creditor*: I will advance so many dollars.

For such a practice and such a state of mind two remedial measures, both chiefly educational, were undertaken by the Extension Service in 1915. The first was to demonstrate that all-cotton farming is not a safe basis of credit except at a ruinous rate.

Accordingly our R. L. Bennett, early in the winter of 1914–15, entered upon a painstaking study of the problem and later published a bulletin which showed beyond question that, by all the experiences and rules of sound finance, credit based upon the sole resource of all-cotton, like investments made in one kind of property or industry, is hazardous. All-cotton farming credit is high because all-cotton farming is risky. By Bennett's demonstration it is shown minutely and practically in terms of actual operation and by the cruel test of the bookkeeping balance, that the farmer who raises cotton to buy his food and feed cannot succeed as well as the farmer who produces his own food and feed unless he receives as much as 15 cents a pound for his cotton.* Even then the all-cotton farmer is at a disadvantage with the food and feed farmer because his labor is unwisely distributed, he has much idle time, his family are practically enslaved and his soil loses in fertility

[63] Peteet, "Farming Credit in Texas," pp. 9–10.

* This calculation was made on food and feed prices of 1914. At present [1917] prices cotton would have to bring at least 25 cents a pound.

by the exhaustion of certain elements of plant food. The Bennett bulletin is an elaborate treatise but this brief summary of its conclusions will suffice in this place. It received cordial endorsement by thoughtful bankers in the Cotton Belt, was adopted by the Dallas Federal Reserve Bank as the basis of a rule for preferential rates on short time notes of farmers who raise their own food and feed, and it has won the approval of members of the Federal Reserve Board and of representative bankers throughout the United States.

During the winter of 1915–16 and the spring of 1916 a representative of the Extension Service by personal visits interested more than a hundred banks in Texas in the use of a farmer's credit rate sheet prepared by Bennett, and for the first time in the history of Texas agriculture many credit contracts were made on the basis of food and feed farming. The idea is still receiving the encouragement of Southern bankers, stimulated greatly by the activities of Bradford Knapp, Chief of Extension in the South, United States Department of Agriculture, and when the rule receives universal application there will be a vast improvement in both credit and farming. Diversified farming not only affords a safe basis of credit — and therefore warrants cheaper credit — but it develops a more or less constant stream of deposits for banking operations instead of the customary summer stringency and winter surplus of money which is the inevitable condition under all-cotton farming. Such a condition causes high priced credit for commerce as well as for agriculture.[64]

Postwar Credit Studies

CO-OPERATIVE CREDIT ASSOCIATIONS

In an effort to suggest improvement in the existing short-term credit facilities for farmers, Valgren and Engelbert reported on "The Credit Association as an Agency for Rural Short-Time Credit." The authors pointed out:

> Cooperative credit associations in the United States have as yet advanced but little beyond the experimental stage. These experiments, if such they be considered, appear, however, to have quite fully demonstrated the possibilities of this form of self-help. This is true in the case of farmers in need of short-time credit, and lacking in proper security or in banking connections, as well as in the case of urban wage earners who occasionally need a reliable source of credit, and are always in need of an agency of saving and thrift that will promptly give them a reasonable return on such sums as they can spare from their weekly or monthly wage. . . .
>
> Rural credit associations, or credit unions, are particularly needed where there are many farmers of small holdings and renters of limited capital. They are most likely to succeed where the need for better credit facilities is strongly felt, and where the members of the community already have many interests in common. A certain amount of local leadership is essential to success, and there must be a self-sacrificing spirit on the part of the leaders which will prompt them for a time at least to perform services for the credit union without other compensation than the direct benefit they themselves derive from membership in the organization, and the pleasure of assisting others in attaining a better economic status.[65]

The report traced the development of credit associations in the United States, pointing out the more important differences in existing

[64] C. Ousley, "Education and Legislation" in Peteet, "Farming Credit in Texas," pp. 80–81.
[65] V. N. Valgren and E. E. Engelbert, "The Credit Association as an Agency for Rural Short-Time Credit," U.S.D.A., *Department Circular* 197 (Washington, 1921), pp. 13, 14.

laws affecting their operations. Particular attention was given to the situation in North Carolina since the credit associations in that state were all strictly rural. A suggested draft of a state law providing for the organization and regulation of co-operative credit associations was also included.

AVAILABILITY OF FARM CREDIT

According to Valgren and Engelbert:

> The financial difficulties experienced by farmers during the year 1921 have led to renewed interest in the problems of rural credit, and attempts have recently been made by the Department of Agriculture to gather significant data on this subject. The specific object of the study, which was made by means of questionnaires and correspondence, was to ascertain the amount of farm credit available from various sources, the cost of such credit to the farmer, the term for which loans are available, and the method of repayment provided for.[66]

The first published results of this study, dated December 28, 1921, presented detailed data, by states, on estimated amount and partial sources of farm-mortgage loans in 1920. It also summarized the data from a survey of more than 13,000 commercial banks, presenting their practices as to taking first and second mortgage loans and also as to rates of interest charged: Low, high, and prevailing (reported by crop-reporting districts).

In concluding, the authors stated:

> While the increase in farm mortgage indebtedness during the last decade, as indicated on the earlier pages of this bulletin, appears almost startling, such increase is not in itself a cause for alarm. It is rather a logical result of increased market value of farms. The increase in these values, in turn, reflects better farm incomes during the decade in question than prevailed during preceding decades, these incomes being to a considerable extent invested in added permanent improvements in the form of buildings, fences, silos, and drainage and irrigation systems.
>
> A very considerable percentage of farm mortgages are the result of land transfers, the mortgage, like tenancy, forming a rung in the agricultural ladder leading to farm ownership. The size of the mortgage naturally tends to bear a direct relationship to the purchase price of the farm.
>
> To the extent that farm mortgages are the result of investments in productive permanent improvements and equipment by existing farm owners, they evidence progress and not regression. In general, the increase in farm mortgages during each decade since data on this subject were first gathered by the census has been most marked in sections which have made the greatest progress during the decade. Even where improvements of the kind above mentioned are paid for out of savings instead of with the proceeds of loans, the increased value and price of a farm is quite certain to result in a larger mortgage in case the farm is transferred to a new owner.[67]

The second part of this study which dealt with "Bank Loans to Farmers on Personal and Collateral Security" presented an estimate,

[66] V. N. Valgren and E. E. Engelbert, "Farm Mortgage Loans by Banks, Insurance Companies, and Other Agencies," U.S.D.A., *Bulletin* 1047 (Washington, 1921), p. 1.
[67] Valgren and Engelbert, "Loans by Banks," pp. 21–22.

by states, of personal and collateral bank loans to farmers outstanding December 31, 1920. The seasonal fluctuation (monthly) of such loans was also shown by geographic regions. Rates of interest charged were reported in considerable detail by crop-reporting districts. The low, high, and prevailing rates were shown for two classifications: "Short-time loans of $100 or more" and "Petty short-time loans." It also included a tabulation of the percentage of banks reporting collection of interest in advance, form of security given, and term of loan. A further tabulation presented data on minimum deposit balance requirements for bank loans to farmers.

In concluding, the authors stated:

> For short-time or personal credit, the farmers rely mainly on commercial banks, estimated loans from this source amounting at the close of 1920 to nearly $3,870,000,000. Data are not at hand for a satisfactory estimate of farmers' personal credit from general stores, implement dealers, and kindred sources which are relied upon for a considerable amount of credit, particularly in certain sections of the country. Bank credit has been unusually costly to the farmer during the past year and a half, but there is no doubt that merchant credit has been even more so. The interest charges of the merchant are almost invariably higher than those of the banks in the same locality and, in addition, a higher price is frequently placed on goods sold to a credit purchaser. . . .
>
> The rate of interest, so far as the legitimate credit market is concerned, can be lowered only by establishing a new relationship between the supply of capital and the demand for it. This can be accomplished only by thrift and saving. The wise farmer borrows not merely for the purpose of making a crop, but to give him a start in efficient production so as to enable him to acquire a working capital of his own. When he has accumulated all the capital he himself can profitably use, he continues to save a part of his income and at a reasonable profit to himself assist in supplying those less advanced than himself with the capital that they need. It is only where a spirit of energy and thrift prevails in a community, whether agricultural or industrial, that real progress in prosperity and well-being is made — a prosperity that is shared by all whether they are engaged in a profession, in trade, or in agriculture.
>
> One of the greatest defects of bank loans to farmers under existing conditions is that credit is not available for such a length of time as is frequently needed by the farmer to mature his products and to market them in an orderly manner. For the production and marketing of crops, loans for a term of from 8 to 12 months are frequently needed, and the producer of live stock, as contrasted with the feeder or finisher of such stock, often needs credit for a period of from 1 to 3 years. To obtain a loan under existing conditions, farmers not infrequently are obliged to agree to repay the same at a time prior to that at which they have any expectation of being able to meet it, and to rely on the hope of being able to renew the loan when it falls due. Such a state of affairs is discouraging at the best, and often leads to serious results for the borrower. At present . . . the maximum term with nearly half the banks is 6 months or less, and only in the case of a very small percentage of the banks are loans made for a year or more. Some means must be found for providing the crop and live-stock producer with credit running for such term as the nature of their business demands.[68]

[68] V. N. Valgren and E. E. Engelbert, "Bank Loans to Farmers on Personal and Collateral Security," U.S.D.A., *Bulletin* 1048 (Washington, 1922), pp. 25–26.

IMPROVEMENT IN FARM-MORTGAGE – DEBT ESTIMATES

A new improvement in the technique of estimating farm-mortgage debt characterized the release issued jointly by the Bureau of the Census and the Bureau of Agricultural Economics in 1923. Previous to this time the Census ratio of debt to value on owner-operated farms had been applied to the value of tenant-operated land to obtain an estimate of total mortgage debt. On the basis of questionnaires sent out to owners of tenant-operated farms, it was found that the ratio of debt to value was lower than for owner-operated farms. The report stated:

> The mortgage debt on fully owned farms, as shown by the census, amounted to 13.3 per cent of the value of all fully owned farms (including those not mortgaged). This ratio (or the corresponding ratio for each state) was used in estimating the debt on farms operated by part owners and managers. The mortgage debt on tenant farms, according to special reports received from the owners of such farms in selected counties, was 9.2 per cent of the value of all tenant farms covered by these reports.[69]

FINANCING TOBACCO

The problems of financing the tobacco industry, from grower to processor, were analyzed in a series of articles in the *Federal Reserve Bulletin* beginning September 1921. In discussing the financing of the grower in the cigar type districts, the study reported:

> The financial needs of the grower differ greatly as between the several districts. Fertilizer bills are large in the Connecticut Valley, but are comparatively small in Pennsylvania, Ohio, and Wisconsin. Where diversified farming is practiced, as in Ohio and Wisconsin, the outlay for commercial fertilizer is much less than in the Connecticut Valley, where the one-crop system is practiced year after year and large quantities of commercial fertilizer are needed. In Pennsylvania large numbers of cattle are fed and manure is used to a certain extent instead of commercial fertilizer. In the Connecticut Valley, also, hail insurance is used by the growers of the sun-grown types, namely Havana seed and broadleaf, and fire insurance by the large growers of shade-grown tobacco and by growers of both classes after the tobacco is placed in the sheds. In that district alone insurance provides a considerable item of expense. Hail and fire insurance are said, e.g., to be bought in Wisconsin "at a very nominal figure."
>
> As a general rule the growers in Ohio and Wisconsin are well to do and need very little financial assistance. In the Miami Valley, however, states one authority, owners of small farms where tobacco is practically the only cash crop produced, generally need more or less financial assistance to carry them from one crop to the next, and likewise with tenant farmers and croppers who reside in the village. In Pennsylvania more help is needed, but less than is required in the Connecticut Valley. A banker in York County, Pa., comments that "farmers in this section are small borrowers for any of their needs. This, we think, is evidenced by the large amounts deposited in our county banks on certificate of deposit."
>
> The grower in the cigar-type districts secures his accommodations from one of three principal sources – the bank, the fertilizer dealer, and, in the

[69] *Press Release,* Department of Commerce, Bureau of the Census – Department of Agriculture, Bureau of Agricultural Economics, "Estimated Total Farm Mortgage Debt: 1920" (Washington, March 13, 1923).

Connecticut Valley and Wisconsin, the leaf tobacco dealer. The landowner in some cases advances funds or indorses for the tenant, who then discounts the note at the local bank.

The store plays a minor role as a source of funds in all the northern cigar-type districts. No local stores in these districts specialize in time business.[70]

Concerning the situation of the grower of manufactured and export types, the study added:

The grower in the manufactured and export type districts secures his accommodation from one of three principal sources — the bank, the leaf sales warehouse, and the local store and fertilizer dealer. The leaf sales warehouse, however, is of small importance as a source of funds in some sections, and the outstanding characteristic in these districts is rather the part played by the store or supply merchant. There are conspicuous differences in practice between the several districts, and, moreover, between the various classes of growers themselves.

At the two extremes stand owner and cropper. The owner finds it unnecessary to borrow in some cases, especially in view of the high price of tobacco for some seasons prior to 1920-21. In general, however, he will either borrow direct from the bank (while perhaps at the same time giving the fertilizer dealer a note , or, more especially in the case of the smaller landowner, will buy on time from the supply merchant. The cropper, on the other hand, in general depends upon his landlord. The landlord in some cases either advances cash directly, or furnishes supplies from a store which he himself operates, while in other cases he vouches for the cropper at the local store, perhaps waiving his crop rights. In certain cases, he indorses the tenant's paper, which the latter takes to the bank. In some sections the farmer may also obtain a cash advance direct from the warehouse, or may have the warehouseman indorse his note, which he then takes to the warehouseman's bank or less frequently to his own bank.[71]

NET WORTH OF FARMERS

At the Thirty-Fifth Annual Meeting of the American Economic Association held in December 1922, Gray presented the first attempt at estimating the accumulated wealth of farmers. In presenting his report, the author stated:

On account of the scarcity of the available statistics on the subject of this paper and the necessity of overcoming serious statistical obstacles, the reader will appreciate the fact that results accurate to the last figure were not to be attained. In short, the task is the making of an estimate of unknown magnitudes in the light of the best data obtainable.

The first question that I have attempted to answer is, how much have farmers as a class accumulated? That is, what is the net worth of farmers as a class? This estimate has been made as of January 1, 1920, for at this date there is a fortunate concurrence of census data and other statistical material needful for the task.[72]

The paper presented estimates, by tenure, of value of farm real estate, livestock and implements, crops on hand, value of growing

[70] "Tobacco Finance," *Federal Reserve Bulletin* 7:1174–75, (October 1921).
[71] "Tobacco Finance," *Federal Reserve Bulletin* 7:1284–85, (November 1921).
[72] L. C. Gray, "Accumulation of Wealth by Farmers," *The American Economic Review, Supplement* 13:159, (March 1923).

crops, miscellaneous supplies, cash and deposits, and stocks, bonds, and town real estate owned.

In commenting on the significance of net worth as a measure of accumulation, Gray stated:

> It is obvious that the net worth of farmers in 1920, amounting as estimated above to nearly $62,000,000,000 is not a complete measure of the economic progress made up to that date by the farming class. As pointed out by W. I. King in a paper referred to above, it does not include the intangible progress achieved in the form of education and other forms of personal improvement. Again, it does not include the farmer's share as a citizen in the public wealth of the nation, the states, and minor civil divisions. However, the farmer as a citizen shares in the liabilities, as well as in the assets of the government, and the liabilities probably exceed the value of all publicly owned assets.
>
> It is also to be noted that the estimate of the net worth of farmers does not comprise all of the wealth saved by the farming classes in the past. A very large part of these savings is carried to town by farmers who retire. It may be roughly estimated that nearly half of the total farm property not owned by farmers is held by retired farmers, not to speak of the wealth in the form of other kinds of property held by this class. Much of the physical wealth is, of course, still in the countryside and contributes through taxes to the community welfare, but the ownership of this wealth accumulated in farming is carried out of the farming industry and out of the farming community through the process of retirement.[73]
>
> Finally, it is obvious that the figure on net worth estimated above does not measure the savings of farmers out of production, as distinguished from wealth acquired through changes in values. A large part of it is comprised merely in a nominal increase of wealth arising from increase of land values. At first thought it might seem possible to allow for this element, but it soon appears that it is impracticable. In the first place, we do not know exactly how much of the present value of farm land represents actual improvements other than buildings, although it is probable that of the $26,000,000,000 of increase in the nominal value of land from 1910 to 1920, only a small proportion could be attributable to constructive additions to value. However, there is a very much greater difficulty. As the decades have passed farmers as individuals have had to acquire the ownership of their land. Some of this ownership has merely been transferred by inheritance or marriage, but a large proportion has been acquired by purchase. The purchase price has represented adventitious, as well as constructive, values, and the fulfillment of these purchases has required hard work and the very real exercise of thrift. It is true, much of this transfer of land by purchase has been within the farming class. Much of it, however, has been repurchased from persons who have retired from farming or from city people who have inherited or acquired by marriage the ownership of farm land.[74]

FINANCING COTTON

A study covering the problems of financing cotton was published by the Federal Reserve Board in 1923. This report covered: (1) Financing the grower — long-staple areas; (2) financing the grower —

[73] It is true some wealth flows back for purposes of investment but it is largely in the form of loans to actual farmers and for the most part the lender does not accompany his wealth. Of course, there are relatively small sums carried into the farming industry through investments made by city people who move to the country to engage in farming.

[74] Gray, "Accumulation of Wealth by Farmers," pp. 172–73.

short-staple areas; (3) financing the marketing of cotton; (4) financing American cotton exports; and (5) co-operative marketing of cotton. In discussing the financing of growers in the long-staple areas, Carson stated:

> Methods of financing cotton in the Delta have developed simultaneously with the plantation system of cotton farming. After the Civil War the system in other sections of the Cotton Belt was supplanted in part by the small farm, but in the alluvial soil sections of Mississippi the plantation system remained intact. The problem of extending credit for cotton growing involves the question of financing the large planters, who in turn extend credit to the tenants. The planters are usually of strong financial standing and are able to establish credit lines with factors, banks, and wholesale merchants in the larger cities and do not apply for credit to the local store or local supply merchant.
>
> The chief problem that has confronted the factor in extending funds for growing the crop has been to obtain adequate security. While the factor has accepted chattel and realty mortgages as collateral, he has in all instances been secured principally by his contract with the planter, who bound himself to consign cotton to the factor to be sold on commission. Under this arrangement the factor has not always been adequately protected against losses, nor has the planter always been supplied with sufficient funds. The violent decline in cotton prices in 1920 brought great losses to the factors and caused many of them to reduce their advances to planters and induced others to withdraw entirely from the business.
>
> In the Delta region the wholesale merchants sell directly to the planters, who in turn supply the needs of tenants through the medium of the plantation commissary. The provision of funds for the planter, to enable him to make payments to the wholesale merchants and to supply his tenants on a credit basis, is generally accomplished through the factor. The recent decline of the factorage business has resulted in the local banks and those in near-by cities being called upon to aid the planter in making cash purchases and to aid the wholesale merchants when sales are made to planters on a time basis.[75]

AN OVER-ALL PICTURE OF THE FARM-CREDIT SITUATION

The first attempt at bringing together an over-all picture of the farm-credit situation was presented in the 1924 *Yearbook of Agriculture*. In addition to a background analysis of the capital and credit requirements of agriculture, the report brought together the results of several previous studies covering individual segments of the field, supplemented by results of a survey made in 1923 and by current reports of the operations of the federally sponsored credit agencies which had only recently assumed importance at that time. These included the federal reserve banks, federal and joint-stock land banks, the War Finance Corporation, and the federal intermediate credit banks.

The development of this study was influenced, of course, by the severe agricultural-credit stringency that had been experienced following 1920. In this connection the report stated:

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[75] W. J. Carson, *Financing the Production and Distribution of Cotton* (Washington), pp. 13–14. Reprinted from the *Federal Reserve Bulletin*: February, March, April, May, and June, 1923.

While commercial banks and other established credit agencies have in the past provided farmers with most of their short-term credit, the inability of these institutions to meet adequately the needs of farmers under all conditions was well illustrated during the recent depression. With the collapse in prices of farm products in 1920 and 1921 a credit emergency arose which has few parallels. Banks and other established credit agencies in many sections of the country were unable to cope with the situation and Federal, State, and local governments were called upon to provide emergency funds. In several Northwestern States where crop failures, high operating costs, and the drop in prices of farm products combined to create a serious situation Federal funds in the amount of $3,500,000 were made available in 1921 and 1922 for the purchase of seed grain. Various county governments in these States also provided farmers with large sums for seed and feed purposes.

The situation in the fall of 1921 became so critical that Congress voted to broaden the powers of the War Finance Corporation to permit advances for agricultural purposes. The War Finance Corporation describes the situation which existed at that time in the following words:

"When the agricultural credits act was passed (August 24, 1921), there was a state of demoralization everywhere among all classes of agricultural producers. Farmers and stockmen generally were in a desperate plight; breeding herds were being sacrificed on a wholesale scale; immature stock was being sent to the block; and cotton, corn, and other agricultural commodities commanded prices that were discouragingly low, in many cases materially below cost of production. Forced liquidation and hasty selling impaired the farmer's buying power, and this, in turn, brought about a reduced demand for the products of industry. Bank deposits were being withdrawn and reserves depleted, loans could not be collected, and the stability of our whole agricultural and banking structure was seriously threatened. Under its broadened powers the corporation made between August 24, 1921 and November 30, 1924, advances totaling $297,934,000. Of this amount 58 per cent was advanced to banking and financial institutions, 29 per cent to livestock loan companies, and 13 per cent to cooperative marketing associations. . . . At the date of the last report only 15.3 per cent of these advances remained unpaid. The influence of the War Finance Corporation in stabilizing credit conditions, however, is not measured solely by the advances it actually made. During these three years it approved loans amounting to almost $480,000,000. The willingness of the Federal Government to approve large advances for agricultural purposes at a time when the prices of farm products were demoralized helped to restore the confidence of both farmers and bankers and greatly relieved the financial stringency."

The life of the War Finance Corporation was extended to December 31, 1924. This extension was made for the purpose of relieving the acute credit situation that developed in the Northwest during the winter of 1923 and spring of 1924. In order to devise ways and means for meeting the situation, the President called in the spring of 1924 an agricultural conference, out of which grew the Agricultural Credit Corporation. This credit corporation was provided with a capital of $10,000,000, privately subscribed, to assist in relieving the credit strain in the rural districts of the Northwest. It was understood that the corporation might rediscount some of its paper with the War Finance Corporation. The funds of the corporation derived from the sale of its capital stock were sufficient, however, to take care of its needs, and none of its paper was passed to the War Finance Corporation for rediscount.

The work of the War Finance Corporation has been completed and its business is being closed. Without doubt it has performed yoeman's service

in relieving the credit stringency which accompanied the collapse in prices of farm products.[76]

ANALYSIS OF THE FARM-MORTGAGE – DEBT SITUATION

The first comprehensive analysis of the farm-mortgage–debt situation was Wickens' bulletin, *Farm-Mortgage Credit,* issued in 1932. In the author's words:

> This bulletin aims to present the facts concerning farm mortgages as they have developed during recent years and then to suggest various methods by which the farmer can so manage his long-term financing as to make adjustment to problems that are likely to be encountered over a period of years.[77]

Some of the author's conclusions were summarized as follows:

> Land and buildings form about three-fourths of the farmers' assets and a corresponding proportion of farm credit is represented by mortgages on real estate. Increases in farm-mortgage debt, accumulated during the period of active land sales at high prices ended in 1920, were continued in the following years by extensive funding of short-term credit into mortgages.
>
> Increase of indebtedness while prices were declining has brought out numerous problems in farm-mortgage financing. The long-term nature of most land-secured debts which average 30 years or more makes the usual arrangement for short-term with frequent renewal a costly practice. Determination of a satisfactory basis for long-term loans in view of possible price changes probably has been the most serious question confronting the user of mortgage credit. Advantageous timing of farmers' borrowing with respect to money-market changes is necessary. These demands require that farmers be supplied with current information that will enable them to manage their credit effectively. . . .
>
> Events since 1910 have not materially changed the geographical distribution of the country's volume of farm-mortgage credit. In 1928 over 60 per cent of farm-mortgage debt was in the North Central States and less than 20 per cent was in the Southern States.
>
> Farmers who own the land they operate have a greater interest in farm-mortgage problems than do farmers of other tenures. Partly on account of larger aggregate acreage and partly because of greater dependence upon the land as a basis of loans, owner-operated farms in 1928 had nearly 59 per cent of all farm-mortgage debt, as compared with 38 per cent for tenant-operated farms and less than 3 per cent for manager farms. Tenant and manager farms being of larger average size have greater debt per farm. Despite these proportions, the debt on tenant farms tended to increase relatively more rapidly between 1925 and 1928 than debt on owner-operated land where heavier loans were an obstacle to further borrowing. . . .
>
> The relative importance of sources of farm-mortgage credit during the last decade has shown a decline in the part played by individuals and commercial banks, and a pronounced rise in the importance of lending institutions specializing on long-term loans. In the course of eight years, 1920 to 1928, the proportion of all mortgage credit supplied by commercial banks declined from 18.4 to 10.8 per cent. Meanwhile the proportion held by life-insurance companies rose from 12.4 to 22.9 per cent, and the combined loans of the Federal and joint-stock land banks increased from 4.3 to 19.1 per cent.

[76] N. A. Olsen, C. O. Brannen, G. F. Cadisch, and R. W. Newton, "Farm Credit, Farm Insurance, and Farm Taxation," U.S.D.A., *Yearbook,* 1924 (Washington, 1925), pp. 231–32.

[77] D. L. Wickens, "Farm-Mortgage Credit," U.S.D.A., *Technical Bulletin* 288 (Washington, 1932), p. 3.

This shift has carried gains for the improvement of agricultural finance. Commercial banks have liberated a considerable amount for current loans, borrowers have been financed for longer terms and at lower rates, and much credit of a capital nature has been given a more appropriate basis in capital security. . . .

A relatively close correspondence appears between the percentage of farms with debt in excess of value and the percentage of farms foreclosed during the same year. In most divisions, foreclosure appears to have taken place somewhat before the debt and the farm value reached equal amounts. In the higher-priced land of the North Central States, the reverse seems to have been true. Allowance for unpaid interest, taxes, costs, and delay of foreclosure have operated to hasten the taking of title, whereas reluctance to assume operating responsibilities and hope of gradual debt liquidation have tended to leave farms in the hands of their owners. . . .

No problem in farm-mortgage finance is more serious than that of changes in price level. Since 1920 great numbers of farmers have lost property because obligations incurred at high prices have had to be repaid with dollars of much greater purchasing power than in war time. Failure to recognize the temporary character of the prices prevailing for land and products at that time has been a leading cause of financial difficulty since. In general, lending agencies tended to make loans proportionate to land value then current; as a result they have since acquired much land that they have not wanted, and farmers have sustained heavy losses in equities.

Three times since 1800 prices have risen to extreme heights for a short term of years and have declined to near former levels. Each of these instances has been followed by general business distress, indicated by bank failure, bankruptcies, and foreclosures. The long term of farm debt requires that the farmer have in mind such possibilities when contracting farm-mortgage encumbrance. Some protection is afforded by the loan limitations imposed by most lenders on first mortgages. In the case of land-purchase mortgages, however, the buyer must exercise his own discretion. The maximum amount of debt that can be incurred with safety can be computed approximately from net returns with allowance for existing price levels and potential changes. A system of crop payments for land purchased in periods of high prices could obviate much difficulty growing out of such periods.

The policy of lending agencies in maintaining loan limits of approximately 50 per cent of the value of land has not changed substantially from pre-war years. As long as this policy is followed arbitrarily, it will continue to be inadequate protection against severe price recessions. The continued nature of farm-mortgage debt requires that farmers guard against such dangers by limiting their borrowings in periods of high prices and not be guided by the amount lenders are willing to advance.[78]

The Federal Intermediate Credit Banks

The troubled conditions in farming areas, following 1920, led to a joint congressional investigation headed by Sydney Anderson, the Chairman of the Joint Commission of Agricultural Inquiry, United States Congress. In Part II of the report of this inquiry, the Commission stated:

This report deals with the fifth subdivision of the subjects of investigation under the resolution, namely, the banking and financial resources and credits of the country, especially as affecting agricultural credits. The commission

[78] Wickens, "Farm-Mortgage Credit," pp. 80–90, 92, 93–94.

believes that a thorough understanding of the fundamental principles underlying the operations of the Federal reserve system and the banking machinery of the country is essential to any well-designed plan for its improvement and has therefore undertaken in this report to outline the machinery of the banking system of the country and the operations of the Federal reserve system and its relation to Treasury policy in considerable detail. . . .

The debacle of prices in 1920 and 1921 reduced the farmer to a condition worse than he has suffered under for 30 years. Prices of farm products are relatively far below the prices of other groups of commodities. The products the farmer has to sell will buy less of the products the farmer has to buy to-day than at any time in the last two decades. Farm indebtedness has doubled in the last 10 years, and the drop in prices has the effect of again doubling this indebtedness. Farmers are having the greatest difficulty in paying the debts incurred in producing the crops of 1920 and in securing credit necessary for new production.

The commission believes that these difficulties are due in a measure to the credit restrictions and limitations of the past 18 months, and in part to the fact that the banking machinery of the country is not adequately adapted to the farmer's requirements.[79]

The Commission went on to state:

It is evident that there is a gap between the short and long time credit furnished by . . . banking agencies which should be filled in some way.

The commission believes that the credit problem of the farmer can best be met by adapting existing banking agencies to his credit requirements. In meeting these requirements there is no reason why, without destroying their utility for the purposes for which they were originally created, all of the banking agencies of the country can not be used by adapting them to the farmers' requirements. These requirements are for credit of sufficient maturity to make payment possible out of the proceeds of the farm. This means a credit running from six months to three years, depending upon the character of the commodities to be produced and marketed. In the case of crops six months may be in some instances sufficient, but in the case of live stock three years may be required.

The commission proposes to meet these requirements by authorizing any Federal land bank through a separate department created in it under restrictions, limitations, conditions, and regulations adopted by the Farm Loan Board to rediscount paper on which money has been advanced to or used by the farmer for agricultural purposes having a maturity of not less than six months or more than three years at rates of discount to be fixed by the Farm Loan Board for any incorporated national bank, State bank, trust company, savings institution, or live-stock loan company. In addition the commission deems it desirable to permit the Federal land banks to make loans direct to cooperative associations of farmers organized under State laws for the purpose of marketing staple agricultural products when such loans are secured by warehouse receipts upon such products.

The notes or obligations representing loans or discounts by the Federal land banks are to be converted into short-time debentures and sold to the public in the same way as farm-loan bonds are now sold.

It is proposed further that notes taken or discounted by a Federal land bank shall be eligible for rediscount with any Federal reserve bank, when such loans have reached a maturity of less than six months. In addition, any

[79] U. S. Congress, Joint Commission of Agricultural Inquiry, *Report of the Joint Commission of Agricultural Inquiry*, Part II, 67th Congress, 1st Session, *House Report* 408 (Washington, 1921–1922), serial 7922, p. 7.

Federal reserve bank is authorized to buy and sell the debentures issued by the Farm Loan Board to the same extent and in the same way as they now buy and sell farm-loan bonds.[80]

The views of the Commission related to central banking policy preceding the crash were also summarized in the report.

The recommended bill presented in the report of the Joint Commission of Agricultural Inquiry was introduced in January 1922. This was known as the Lenroot-Anderson bill, from the sponsors of the bill in the two Houses of Congress.

In discussing the various legislative moves that preceded the enactment of the "Agricultural Credits Act of 1923" which provided for the establishment of the 12 federal intermediate credit banks, Valgren stated:

> Among the large number of rural credit bills introduced in Congress prior to the recent session at which the act here considered was passed, may be mentioned the McFadden bill, often called from its unofficial author the Milliken bill, which provided for an elaborate system of rural credits, coupled with a system of agricultural insurance; the Simmons bill and the Norbeck bill, each of which provided under somewhat different plans for an intermediate credit system based on the present organization of the War Finance Corporation; the Lenroot-Anderson bill, already mentioned, which provided for an intermediate credit system to be operated in close relationship to the federal land banks; the Capper-McFadden bill, which authorized the organization by private initiative of agricultural credit corporations with special reference to the need of the live-stock industry; the Norbeck-Strong bill, more generally called merely the Strong bill, which made certain changes in the mortgage credit system under the original Federal Farm Loan act. Both the Capper-McFadden bill and the Lenroot-Anderson bill carried amendments to the Federal Reserve act with a view to enlarging the facilities of the reserve banks with reference to agricultural paper. Considerable time was consumed in hearings and informal conferences on these bills. The members of the so-called Farm Bloc particularly gave a large part of their attention to the credit problem.
>
> The National Agricultural Conference called by the Secretary of Agriculture at the request of the President of the United States, met at Washington, D. C., January 23–29, 1922. This body, consisting of 366 delegates from all parts of the United States, gave considerable attention to the problem of rural credit and indorsed in general terms the plan recommended by the Joint Commission of Agricultural Inquiry, or in other words, the Lenroot-Anderson bill, which had shortly before been introduced in Congress. It also recommended the increase of the loan limit by federal land banks from $10,000 to $25,000, and urged representation of the shareholders of these banks in the bank directorates.
>
> With the opening of the fourth and last session of the 67th Congress, in December, 1922, an extra session having preceded each of the two regular sessions, the Lenroot-Anderson bill in modified and amplified form was reintroduced in both Houses of Congress. The Capper-McFadden and the Norbeck-Strong bills, which also had been materially modified, were similarly re-introduced.[81]

[80] *House Report* 408, pp. 8–9.

[81] In each case where a double name is here given for a bill, the first name is that of a senator and the second that of a representative. However, in each House of Congress such bill is generally referred to by the name of the member of that House who introduced the bill — if a name is used at all — the official designation of a bill being by number.

In January, 1923, the Senate passed both the Lenroot bill and the Capper bill, while shortly afterwards the House passed the Strong bill. For a time it seemed as if no legislation would result because of the continued divergence of opinion in and out of Congress. Some Congressmen, as well as others, felt that the Lenroot-Anderson plan provided quite adequately for the farmers' intermediate credit needs. Other Congressmen, as well as persons outside of Congress, contended that the Capper bill alone would suffice to meet these needs. There was considerable opposition to various features of the Strong bill.

On March 1 the House combined into a comprehensive measure and passed the Lenroot bill, the Capper bill, and the Strong bill, making the measure in form an amendment of the Capper bill. On the same day conferees of the Senate and the House were appointed. These conferees did very effective work in revising and reconciling the Senate and the House bills into what became the Agricultural Credits act of 1923, and reported the results to their respective Houses on March third. Both Houses acted favorably on the conference committee's report and the bill was approved by the President on Sunday morning, March the fourth.[82]

The first over-all appraisal of the Federal Intermediate Credit Bank System appeared in 1926. The conclusions reached in this study were summarized by the author:

1. Agriculture requires a considerable portion of its credit accommodation for production and marketing for periods of six months to several years.
2. In the past, country banks have extended this credit on short-time loans with promises of renewals. Frequently, however, the costs of the credit have been higher than a good security would warrant, and in times of credit stringency renewals have been difficult to obtain.
3. Agricultural credit corporations can be employed for more effectively connecting farmers in capital-deficit areas with distant sources of loanable funds. However, for agricultural credit corporations organized under state laws there are not sufficient legal safeguards against unwise credit extension, and unless the Intermediate Credit Bank management exercises careful supervision over these corporations they may develop so as to harm our credit structure.
4. The Federal Intermediate Credit System will be able to furnish agriculture with a dependable source of credit supply at costs commensurate with those paid by other industries so long as the Intermediate Credit Banks can secure the funds through the sale of their debentures.
5. The Federal Intermediate Credit Banks cannot insure farmers against a possible credit stringency in the future because they have no control over our general banking and credit policies. This control still resides in the Federal Reserve system.
6. The most important function that the Federal Intermediate system performs in our credit structure is in furnishing a channel whereby credit institutions located in sections where local capital is scarce can readily reach the investors in surplus capital areas. This service can be made of great value, particularly to the livestock industry, the co-operative marketing associations, and to all farmers located in areas where local capital is insufficient for their needs.[83]

[82] V. N. Valgren, "The Agricultural Credits Act of 1923," *The American Economic Review* 13:445–47, (September 1923).

[83] C. L. Benner, *The Federal Intermediate Credit System*, The Institute of Economics (New York: The Macmillan Co., 1926), pp. 278–79. (The author was aided by the Council and Staff of the Institute.)

The problems of agricultural credit corporations set up to discount loans with the federal intermediate credit banks also received the attention of research workers. One of the first published studies dealt with their operation in the state of Arkansas. In this study Gile reported:

Agricultural credit corporations were the only type of organization which has functioned in providing the farmers of Arkansas with credit for crop-growing purposes through the intermediate credit system. Twenty-six agricultural credit corporations and two livestock credit corporations were organized in Arkansas, between the enactment of the Agricultural Credit Act in 1923 and July 1, 1930. Fifteen of the 22 credit corporations, organized prior to 1930 for making crop loans, had discontinued business by 1929. Seven local credit corporations made crop production loans during the season of 1929 and 11 in the 1930 season. In addition, the two livestock credit corporations operated on a small scale in the 2-year period, 1929–1930.

The average number of seasons during which the discontinued corporations functioned was three. The high percentage of liquidations may be traced largely to the absence of ownership interest on the part of patrons and to the low gross income available for operation. Farmers made no contribution to the initial paid-up capital stock in 12 of 19 corporations for which data on this point were obtained, and farmers supplied all of the capital stock in only two of the 19 cases. No corporation organized prior to 1930 has survived where farmers did not contribute to the capital stock. The requirement that all patrons buy capital stock is one of the outstanding characteristics of surviving credit corporations. This requirement gives substantial evidence of cooperation and insures some interest in permanency, even though the prospect of dividends may be remote. The management of agricultural credit corporations has not been aggressive, due in part to the fact that most managers were otherwise employed and could not afford to actively solicit business. . . .

The conclusion is reached that, since many farm communities in the South are dependent upon outside capital for crop production, there is need for a credit institution to bring these farmers into contact with lenders as efficiently and economically as possible. The question may appropriately be considered whether some changes might not be made which would enable farmers to use the services provided by the intermediate credit system more extensively. Two possibilities present themselves for consideration. If the agricultural credit corporation is to be the chief institution that functions in connecting the farmer through the intermediate credit system with credit for crop-growing purposes, the matter of their organization should be simplified, if possible, and an elastic basis for their capitalization provided. The regulation of the Federal Farm Loan Board requiring $10,000 minimum capital stock in order to discount with an intermediate credit bank is too large and burdensome for many communities. There are communities where the effective demand for seasonal credit through the intermediate credit system may be as low as $25,000. If the capital stock required were in proportion to loans accepted and the 1 to 7 regulation followed as at present, then only $3,750 of capital stock would be required to be eligible to rediscounting privileges as compared with the present minimum of $10,000.

A more effective way to provide access to seasonal credit through the intermediate credit banks to farmers would be for Congress to provide for a national system of connecting institutions comparable to national farm loan associations as provided in the Federal Farm Loan Law. If this were done charters would be issued by the Federal Farm Loan Board to qualify

local groups of farmers. A change of this sort should result in reduced organization expense, uniformity in type of organization, elasticity in capital stock required, and better supervision. Modifications of course would be needed in the plan as provided in the set-up of national farm loan associations. For instance, in these suggested national credit associations for farm operating credit, borrowers might be required to own and hypothecate stock equivalent to 10 or even 15 per cent of the loan instead of 5 per cent and the stock probably would not be redeemable before liquidation of the local association.[84]

In a second study, Rowe analyzed the problems of the specialized corporation set up as an adjunct to co-operative cotton marketing associations. In this study the author reported:

The cotton cooperative associations were quick to take advantage of the Federal intermediate credit system. By 1924, 4 credit corporations had been formed and were lending money to members of the affiliated associations. In 1925, 4 more were in operation. In 1926 another 4 were added to the list; in 1929, 1; in 1930, 2, and in 1931, 2. Thus a total of 17 credit corporations have been organized although not all have continued operation or maintained their affiliation with the marketing associations.[85]

In summarizing their experience, Rowe stated:

Conclusions regarding the corporations included in this study and any suggestions for future policy will depend on the point of view taken as to their fundamental purpose. Are these corporations to be judged on the basis of their own showing as agricultural credit institutions or as a part of the cooperative marketing movement? Furthermore, to render the greatest service to all concerned should they continue to be affiliated with the marketing associations?

As financial institutions purely, their record, with few exceptions, has been disappointing. They have financed in all but one case only a very small portion of the farmers in their area — almost a negligible portion — although the business which they have done in those communities where banks have failed was undoubtedly a real help. In 1930, the combined volume of business was the highest of any year, but that was largely due to the rapid expansion of one of the most successful corporations, its business representing more than 60 per cent of the total. Many of those corporations that contributed to the large total volume of business in 1926 were out of business or in liquidation by 1930. Half of the corporations that have been organized have failed or have voluntarily gone out of business, and in 1931 only a few of them were aggressively going forward. In passing judgment on them, however, it should be kept in mind that farm credit agencies of other kinds have failed in large numbers during the same years.

There have been several causes of failure, chief among which have been: (1) Large losses on loans due to low prices of cotton, to the single-crop type of farming, resulting in excessive borrowing and excessive hazards, and to the lack of sufficient reserves of the borrowers, resulting in the security being often limited to a crop lien; (2) limitations of earnings, due both to legal limitations on interest charges and to the seasonal character of the

[84] B. M. Gile, "Organization and Management of Agricultural Credit Corporations in Arkansas," Arkansas Agr. Exp. Sta. *Bulletin* 259 (Fayetteville, 1931), pp. 43–44, 46–47. Further developments in this field were reported in a subsequent report: B. M. Gile, "Development of Agricultural Credit Corporations in Arkansas With State Aid in 1931," Arkansas Agr. Exp. Sta. *Bulletin* 281 (Fayetteville, 1932).

[85] W. H. Rowe, "Agricultural Credit Corporations Affiliated With Cotton Cooperative Marketing Associations," U.S.D.A., *Technical Bulletin* 322 (Washington, 1932), p. 4.

business, so that the accumulation of reserves sufficient to meet the losses has been very difficult; (3) relatively high costs of operation, due to the small size and scattered location of the loans; (4) inefficient management in some instances; and (5) the practice in the early years of granting doubtful loans in order to induce farmers to join the marketing associations. The immediate cause for discontinuance of operations by three of the corporations has been the inability to get credit from the Federal intermediate credit banks as a result of the impairment of capital from an accumulation of uncollectible or frozen loans. Three others discontinued operations after a small experiment of a year or two had disclosed the difficulties of furnishing production credit. Two of the corporations went out of business because the parent organization failed.

In addition to making an unimpressive showing as financing institutions, the corporations usually have failed to give substantial aid to the marketing associations. Estimates of the number of bales of cotton financed by all corporations have at no time placed them in excess of one-fourth of the total deliveries, and in the case of some corporations the portion of deliveries obtained by financing the crop has been negligible. Moreover, the volume of financing does not appear to have borne a close relationship to the volume of cotton delivered. . . . Nevertheless, some of the corporations have cost the parent association substantial sums in the way of expenses of operation, the sacrifice of income on investments in their capital stock, and losses in the value of that stock.[86]

State and Other Postwar Credit Studies

NORTH CAROLINA

In 1922, the North Carolina Experiment Station and the Bureau of Agricultural Economics undertook the first comprehensive farm survey to ascertain terms and conditions of all types of credit utilized by farmers. The report of this study stated:

North Carolina farmers, according to conservative estimates, contract debts amounting to more than $200,000,000 annually, or an average of more than $500 for every farmer in the State. The question of farm credit, therefore, is an exceedingly important one. A difference of one per cent in the average interest rate for instance would affect the net income from agriculture to an amount approximating $2,000,000 each year.

Interest rates incidentally constitute only a small part of the farmer's credit problem. Often he is unable to get credit at all, unable to get it when the use of a judicious amount of borrowed money might help him greatly to increase his production and change the results of his farming operations from loss to profit. Frequently he cannot get the term on his loan which will meet his needs. Perhaps he may be able to borrow for a term of six months only, when he requires a year for the growing and orderly marketing of his crop.

Evidently the conditions under which farmers obtain credit will have a marked influence on the success of farming operations. For such conditions to be most satisfactory, three things are necessary: (1) correct credit legislation, (2) efficient use, by credit agencies, of facilities offered by such legislation, and (3) an understanding of the credit situation by farmers themselves.

None of these things are possible without the possession of facts. To obtain such facts a farm to farm survey, coupled with a survey of banks and

[86] Rowe, "Affiliation With Cotton Cooperative Marketing Associations," pp. 60–61.

stores was made in the summer of 1922. Records from 800 farmers, twenty banks and fifty-two stores were obtained. The work was done in sections of three counties, each section being considered as typical for larger portions of the State. . . .

The plan of the survey was to make all data as specific as possible. Thus each farmer, banker, or storekeeper was asked questions regarding his own business and not for estimates regarding conditions in his community in general. Each farmer was asked how much money he had borrowed in 1921, or how much he had bought on time, from whom he received such credit, what security he was required to give, what rate of interest he had to pay, and similar questions on which he would be able to give specific replies. There were a few cases in which farmers did not remember all their credit transactions in 1921, and in a few instances they were hazy regarding individual points, such as the exact term of their loan, commission paid for it, etc. In general, however, a summary of these replies is believed to be a fairly accurate index of farm credit in the State.[87]

The authors' conclusions were summarized, in part, as follows:

. . . The farm mortgage situation is better than that for other kinds of credit and, furthermore, seems to be steadily improving. The Federal Land Bank of Columbia, S. C., is gradually taking over land mortgage loans needed for longer periods of time, and in addition, out-of-state financial institutions are now offering such loans at reasonable rates.

Credit advances for current expenses are those in which the greatest room for improvement exists. By far the larger part of such advances are obtained through the purchase of supplies on time, a practice which has long been recognized as extremely costly. . . .

Stores apparently handle more of such business than all other agencies combined, while banks carry less than one-sixth of the total. A large proportion of the credit is supplied by fertilizer factories and their local agents, through the sale of fertilizer to farmers on time. . . .

The cost of credit from stores is seen to be more than 25 per cent when calculated on the basis of a yearly interest rate, while banks charge little more than 6 per cent. Farmers would profit greatly if they could place themselves in position to borrow from banks and pay their bills with cash. Merchants would be benefited since they could then give their attention strictly to merchandising and avoid the risk of loss which they now assume. Bankers would also profit due to the resulting improvement in farmers' financial condition and the increased business which these farmers would give the banks. The question arises, however, as to whether farmers can get further credit from banks. Why do they now count on stores to such an extent for accommodation?

Many ask for credit from stores out of habit and do not realize how high the charges are. There are others, however, who cannot obtain credit from banks. This is often due to the fact that no contact has been established and the farmer's credit rating has not been determined. Such cases must, of course, be considered separately from those in which farmers are known to be poor risks.[88]

NEW YORK

In the same year that North Carolina farmers were being surveyed as to terms and conditions of credit utilized by them, Spencer under-

[87] F. R. Yoder, H. S. Beardsley, and A. J. Honeycutt, "Farm Credit in North Carolina, A Survey of 800 Farms," The *Bulletin* of the North Carolina Department of Agriculture (Raleigh, May 1923), pp. 5, 7.

[88] Yoder, *et al.*, "North Carolina," pp. 25, 26.

took a survey in New York State to ascertain the costs *to merchants* of extending credit to farmers. The purpose and scope of the study were outlined by the author:

> . . . Before specialized agencies for lending money were developed in rural communities, farmers relied very largely upon their local merchants to supply the needed credit. More recently country banks have become available to all rural communities in the State, but they have been slow to replace the country stores as a direct source of credit for farmers. In order to determine to what extent store credit is now used by farmers and the cost and efficiency of this form of credit, this study was made of the credit services of country stores in three typical areas of New York.
>
> Most of the data were obtained by the survey method. During the late summer and fall of 1922, personal visits were made to nearly all the country retail merchants in Genesee, Tioga, and Jefferson Counties. A complete record of the credit operations for the preceding fiscal year was obtained from each of 191 merchants. Records were obtained from only those merchants who had been operating the same business for at least one year and who did at least fifty per cent of their business with farmers. Additional data were obtained by means of questionnaires sent to country doctors and veterinarians and to firms selling automobiles, trucks, and tractors.[89]

As to the cost of extending merchant credit, Spencer stated:

> The ratio of credit costs to credit sales is useful for estimating the differentials that should be made between cash and credit prices. In table 27 are shown the percentages that the credit costs of country stores constituted of their credit sales. This ratio varied from 4.6 per cent for feed stores to 7.6 per cent for hardware stores. The average for all stores was 5.28 per cent. . . .
>
> These facts indicate that on the average credit customers should pay about 5 per cent more than cash customers, to cover the extra costs which the merchants incur in handling credit. If this policy were put in force, cash customers would pay somewhat lower prices and credit customers somewhat higher prices than under the present system. At present cash discounts are given on relatively few commodities and by relatively few country stores. Where cash discounts are given, the most common rate of discount is 5 per cent, or about the same as the rate of cost indicated in table 27.[90]

In conclusion, the author went on to say:

> Country stores are an important source of farm credit as well as personal credit. The cost to the stores of furnishing this credit service is equivalent to twice or three times the usual charge for bank loans. The stores borrow from the banks at the same rate as do the farmers, and in addition to the interest which they either pay for borrowed funds or forego on their own capital, they incur many other expenses in giving credit to their customers. The result is that country merchants are compelled to take wider margins and to charge higher prices than they would if they were not called upon to furnish this service.
>
> Under the present system the cost of store credit is paid in general by all buyers, including those who do not benefit from this service. A system of adequate discounts for cash should be encouraged, since this is an effective method of assessing the cost of credit against only those who receive it.

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[89] L. Spencer, "An Economic Study of Rural Store Credit in New York," Cornell University Agr. Exp. Sta. *Bulletin* 430 (Ithaca, 1924), p. 3.

[90] Spencer, "New York," p. 24.

While a limited amount of store credit may be justified as a convenience in trading, it is an uneconomical source of farm capital.[91]

NORTH DAKOTA

In 1923, Willard undertook a credit survey in North Dakota in which he related the indebtedness of individual farmers to the value of their various types of assets and to their gross farm income from crops and livestock sales. Information was also obtained as to the amount of insurance carried. Some of the major results of this study were summarized:

The survey comprises 106 farms, 61 owners and 45 tenants in four townships of Foster County, North Dakota. . . .

The average gross income from sales was $968 per farm of which approximately one-third was from wheat.

Average total assets for owner farms amounted to $29,419 and total liabilities, $11,317; the average net worth of owners was $18,102. For tenants the average total assets amounted to $3,426 and their net worth, $1,507.

Of all farms, 10 per cent had liabilities amounting to more than their assets; 43 per cent of the farms had obligations in excess of half their assets and 24 per cent had liabilities amounting to less than 25 per cent of their assets. Only five farmers had no obligations. . . .

Of the 106 farms covered by this survey 59 per cent of the owners desire to secure the benefits of a $1,000 government loan for livestock and 70 per cent of the tenants desire such a loan.

On a careful basis of financial and moral rating as to risk, 25 of the owners who want the loan are eligible to receive it. Of the 38 tenants who desire the loan, 28 appear to qualify to receive it. Thus, 50 per cent of the entire number of farms covered by this survey are eligible to receive it.[92]

REGIONAL VARIATIONS IN FARM-MORTGAGE INTEREST RATES

In a study of the factors affecting regional variations in farm-mortgage interest rates, Wigder stated:

Conditions affecting farm-mortgage interest rates are primarily local in character. There are, however, certain factors that apply in a general way to homogeneous areas, and it is with these latter factors that this article is concerned.

To obtain the proper farm-mortgage interest rate areas, the average rates for all the counties in the United States, as reported by the 1920 Census, were placed on a map and the country was then divided into interest rate groups. These figures represent the interest paid only, and do not include commissions or fees. The unit of division chosen was one-half of 1 per cent, although in a few instances this unit proved too small and a larger unit had to be used. As a result of this grouping, the country was divided into 15 sections which have fairly homogeneous physical, economic, agricultural, and social characteristics. Owner-operated farms only were included in gathering farm-mortgage data, since it was believed by the Census authorities that managers and tenants would not be familiar with, nor in a position to give, accurate information with respect to the mortgage conditions. . . .

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[91] Spencer, "New York," p. 39.

[92] R. E. Willard, "Report of a Farm Credit Survey of Four Townships, Foster County, North Dakota," North Dakota Agr. Exp. Sta. *Bulletin* 175 (Fargo, 1924), p. 2.

Perhaps the most important correlation with farm-mortgage interest rates is their inverse relationship to land values. The value per acre of land alone for each county in the United States was plotted on a map and the country divided into land value areas in the same manner that was done with the interest rates. A glance at Maps I and II immediately shows the contour lines taking similar directions in both maps.

In general, it may be said that the factors contributing toward high land values, directly or indirectly tend to bring about low farm-mortgage interest rates. These factors may be physical, economic, and social; each one or all three classes may be especially important in a particular community. . . .

. . . it may be said that the idea of this survey is not to prejudice investors in farm mortgages in favor of one section of the country at the expense of another. Rather it is an attempt to show why individuals or institutions do as they do. It is an attempt to explain the predominating factor or factors that most affect the interest rate in the different parts of the United States. Eastern Wisconsin has the lowest interest rate in the United States because agriculture is diversified, and because it is a great dairy region largely farmed by a thrifty German and Scandinavian population. The savings are sufficient to make it possible for one farmer to lend to another, thus avoiding all such extra expenses as overhead and appraisal. These farmers would rather lend their money at 4 per cent to neighbors where they may view every day the security of the investment, than buy first-mortgage bonds at 6 per cent on property in some other part of the country. Almost one-half of the farm mortgages in Wisconsin had an interest rate of 5 per cent or less, those above this rate being in the western and northern cut-over regions of the state.

The Everglades region of Florida presents a contrast. The rate here is higher than that of the surrounding territory, and the cause is found in the limited supply of money for this land. It has only recently been taken over for agricultural purposes, and, since it is newly settled, a great deal of draining, development of transportation facilities and other preparatory work needs to be done in order to make the land good security for loans.

One illustration after another might be cited. In one place the interest rate is low because of diversified agriculture; in another it is high because of the risk involved in raising a specialized crop; in still another place the interest rate is high due to a combination of insufficient rainfall and high altitude, or to distance from markets. The investor in placing his money should make a study of the locality under consideration and decide to what extent he is willing to forego some of the increased return for a secure investment.[93]

AREA CREDIT SURVEYS

The Bureau of Agricultural Economics initiated a series of cooperative agreements for conducting area credit surveys with agricultural experiment stations in the southern states during the late twenties and early thirties. The first published study in this series analyzed the farm-credit condition in two cotton-growing areas of Arkansas, one of which was a plantation area. Gile and Moore reported:

The sources of seasonal credit were commercial banks, merchants or landlords, and individual lenders. Plantation operators obtained most of their short-term loans from the banks, but their tenants obtained most of

[93] C. F. Wigder, "Farm-Mortgage Interest Rates," *The Journal of Land & Public Utility Economics* 1:102, 103, 115, 117, (January 1925).

their credit from the landlord or from merchants. The supply merchant was the chief source of seasonal credit for both owners and tenants in the Cleveland county district, although the banks supplied 38 per cent to the owner class. The rate of interest on short-term loans varied with the source of the loan and tenure of the farm operator. In the plantation district in 1926 owners paid on bank loans 7.7 per cent and share tenants paid 10 per cent, but in the upland district owners paid an average time rate of 10 per cent on bank loans. The rate of interest on loans from other sources was much higher. In the plantation district on loans from other sources, chiefly from supply merchants, owners paid at the rate of 20 per cent, small share tenants 39 per cent and croppers 44 per cent. In the upland district on loans from other sources the rate was lower, owners paying at the rate of 18 per cent, share tenants at 19 per cent and croppers at 21 per cent. The cost to the tenant for supply credit was about the same whether obtained from a general store or from a plantation commissary. . . .

. . . the costs of seasonal credit to the large plantation farmer compare favorably with similar costs in other regions of the country, but costs of seasonal credit to the small farmer place him at a disadvantage in the sense that farmers in many competing sections are able to control the necessary capital at lower costs. Some of the smaller farmers are no doubt improvident and possess no basis for independent credit activity. Since the bulk of the credit extended to them is used for current personal consumption, their productive efficiency is not increased as it might be were credit used more largely to gain control over capital goods. Most of the farmers in this class could save something in years of more than normal crop returns, or through greater productivity per individual, without lowering their present living standard. The income from savings thus affected would consequently enable them to raise their standard of living and lower the cost of credit for productive purposes. For this class improvement is likely to come slowly. A definite plan of agricultural education, including the teaching of finance and thrift in the public schools, seems highly desirable.[94]

CHANGES IN FEDERAL FARM LOAN ACT

Changes in the Federal Farm Loan Act made after the establishment of the system, affecting the degree of control exercised by the Federal Farm Loan Board, were the occasion for considerable controversy among economists. Landis reported:

. . . The original act establishing the banks required that, when the local farm associations had retired all of the Treasury stock in a bank, they should be allowed to elect six of the nine directors of the bank, the remaining three to be named by the Federal Farm Loan Board. As the system developed, the members of the Federal Farm Loan Board opposed passing the control of the banks to the elected representatives of the Farm Loan Associations. They alleged that farmers were not exercising sufficient initiative; that the Board had difficulty in securing the proper men to fill the office of secretary-treasurer in the local associations; that farmer-control might interfere with the sale of the bonds of the banks; that the cooperative features of the plan were not appreciated by the farmers; that a continuation of control by the Board was essential to the efficient operation of the system.

The Agricultural Credits Act passed by Congress in 1923 contained provisions recommended by some of the members of the Farm Loan Board. It

[94] B. M. Gile and A. N. Moore, "Farm Credit in a Plantation and an Upland Cotton District in Arkansas," Arkansas Agr. Exp. Sta. *Bulletin* 228 (Fayetteville, 1928), pp. 41–42, 43.

amends the act of 1916 which established the system and provides that when the local associations have purchased all the stock in a bank there shall then be seven directors; that the local associations shall elect three, by districts; that the Federal Farm Loan Board at Washington shall appoint three, by districts; that the Board shall name as a director at large one person from among three persons who shall have received the highest number of votes from the local associations for this office. Thus the original plan to set up a system of land banks controlled by local cooperative societies has not been realized, and considerable dissatisfaction has been voiced by the rural press and by farm leaders. . . .

Experience indicates plainly that the Federal Farm Loan Board created by Congress has not established a cooperative system. It is alleged by some students that this is the usual experience of governmental agencies — that they do not or cannot establish genuine cooperative societies. (There are apparently exceptions, as in the case of the credit cooperatives of India, fostered by the British government.)

However, it must be recognized that others contend that the Federal Farm Loan System, even if it has been carried out as its founders planned, could never have been a "truly cooperative" institution, and would have only been a "mutual" institution. This is a technical distinction, but is considered important by cooperative leaders and by economists. The "truly cooperative" system is regarded as one which springs out of local development, is thoroughly democratic in design, and requires a high degree of participation in the responsibilities of ownership on the part of the individual member. It is alleged that our government-assisted farm loan system never had in it the germs of a cooperative institution.

The work of the Federal Farm Loan Board involves elements for both the agricultural statesman and the social engineer to consider. Should the agencies and persons interested in meeting the permanent credit needs of agriculture recommend the establishment of governmental agencies? Or should they encourage the development of local group cohesion and the conservation of local resources, as the permanent basis for a credit system?[95]

The heavy burden of the farmers' debt even led to proposals for "writing down" interest charges. Landis stated:

Due to the fact that the purchasing power of agricultural products has been low, the ratio of mortgage debt to value of the farms has been increasing between 1920 and 1925, as has been indicated in the 1925 census returns. This has made the interest burden very heavy. It is significant to note that there have been proposals to reduce it, just as some of the war debts of European governments have been written off. This was the recommendation of Senator Gerald P. Nye of North Dakota in an address at the Labor Temple in New York, November 28, 1926. Two other recommendations of a similar nature from well-informed sources may be noted here. The first is from *Farmstead, Stock and Home,* an influential paper published in Minneapolis, which dealt with the matter editorially in the May 15, 1926, number. The second comes from Richard T. Ely, formerly professor of economics at the University of Wisconsin, now director of the Institute of Land and Public Utility Economics in an article in the April, 1926, number of *The Journal of Land and Public Utility Economics.*[96]

[95] B. Y. Landis, *Social Aspects of Agricultural Credit* (New York: Department of Research & Education, Federal Council of the Churches of Christ in America, 1927), pp. 20–21, 74–75.
[96] Landis, *Social Aspects,* pp. 27–28.

IOWA

The first effort to develop an annual index of farm-mortgage indebtedness was made in Iowa. Murray and Garlock reported:

During the past few years many inquiries have come to the college concerning changes in the mortgage debt from 1915 to the present time. Particular interest is shown in the developments of the last several years. Interest in the mortgage debt is manifested apparently because of the relation between the mortgage debt and the general agricultural situation in the state. Information is desired bearing on the highest point reached by the debt following the war and the nature of the adjustments which have come since that time. Doubtless, also, people are seeking information which may be used as a basis of judgment as to the probable developments in the near future. It was in answer to such questions that this study was undertaken.

To study the history of every mortgage that has been made in Iowa during the past few years would be an almost impossible task. In this study, therefore, areas were selected in different parts of the state which were representative of different soil and climatic conditions, including also both high and low priced land as well as different types of farming. In accordance with this plan two townships each in Cherokee, Jefferson, Cedar, Fayette and Montgomery Counties, and three townships in Story County, were chosen as likely to include a fair sample of the various factors mentioned above.

The effort was to get a complete mortgage history of all the farm land in these townships for the years covering the boom and depression, 1915 to 1925. In all about 5,000 mortgages were included in the study. These data were obtained from the records of the various county recorders by a representative of the Agricultural Economics Section of the Iowa Agricultural Experiment Station, who received most helpful suggestions and assistance from the county officers. Bankers, lawyers and other informed persons in each of the localities supplied information concerning the purposes of the loans and the sources of funds for repayment in cases where the county records were inadequate. . . .

. . . Some difficulty was experienced in obtaining these figures for the reason that while the county records included the dates of execution and release, as well as the consideration, of every mortgage which had been recorded for the period, there was no figure for the total outstanding debt, and record of partial payments on the mortgages was also lacking. It was necessary, therefore, to compute as accurately as possible the amount of the outstanding debt from available data, and for that purpose the following method was adopted.

To begin with, a figure for Jan. 1, 1915, was arrived at by summating all of the mortgages recorded between Jan. 1, 1905, and Jan. 1, 1915, and deducting all of the mortgages of this group which had been released during the same period. Taking this figure as a point of departure, the outstanding debt for Dec. 31, 1915, was derived by adding all of the farm mortgages recorded between Jan. 1, and Dec. 31, 1915, and deducting the ones which were released. A similar method was used in calculating the outstanding debt on the subsequent dates included in table 1.

This method has several possible sources of error. Doubtless some mortgages had been recorded prior to Jan. 1, 1905, which were yet unreleased by Jan. 1, 1915; likewise, some of the mortgages executed during this period probably were not recorded. Both of these omissions would tend to cause the basic figure computed for Jan. 1, 1915, to be less than the actual outstanding debt. On the other hand, however, no adjustments for partial payments were to be found in the records; and to the extent that there had been such

payments, the basic figure tended to be above the actual farm mortgage debt. It is believed that these omissions, which affect the computation in opposite ways, very largely offset each other, and that, consequently, the basic figure as calculated for Jan. 1, 1915, is a close approximation of the actual outstanding farm mortgage debt at that time. The figures for the following years, enumerated in table 1, of course, are subject to the same possible errors of computation.[97]

Annual data were also presented on farm mortgages recorded and released, acreage mortgaged, purposes of loans, sources of funds for payment, lender distribution, and excessively mortgaged or distressed land.

In discussing the problems of excessive indebtedness, the authors stated:

> Of the land mortgaged in 1920 above the limit that would stand the shock of the price deflation and ensuing depression, one of the outstanding facts centers in the large portion that has gone back to former owners or has been assigned. Fully twice as many farms have figured in settlements out of court as have been foreclosed on in the courts of equity. This is the result of the expensive procedure of settlement thru foreclosure.
>
> An examination of the mortgage debt existing against individual farms on January 1, 1926, in the 13 townships disclosed a large number of farm owners still burdened with a heavy mortgage debt. Of the total land in farms 4.5 percent was found encumbered by an amount in excess of the limit justified by farm income. Interest payments on the debt against this land were delinquent. If the interest on the average debt of $163 an acre is computed at 6 percent, the annual interest charge against the land is $9.78 per acre.[98]

The mortgage-credit difficulties of the twenties led Murray to undertake a comprehensive historical study of farm-mortgage activity in a single county. In the report covering this study Murray stated:

> . . . Abundant evidence is at hand indicating a widespread epidemic of foreclosures and assignments of farm land to mortgage holders in the last seven years. In the light of these facts it appears reasonable to ask for more information on conditions preceding those of recent times in order that more insight may be gained as to the causes of the recurring periods of financial prosperity and distress among farm owners.
>
> The existence of farm-mortgage records in Iowa in an unbroken series from the establishment of the county governments down to the present time provides an excellent source of raw material for the desired information. . . .
>
> Three objectives have been selected for the study. The first of these is the development of a satisfactory method of gathering, analyzing and tabulating mortgage records. The second is an explanation of the changes in the mortgage-debt situation in Story County. This requires an insight into the sources of funds, the interest rates charged by different lenders and the term of the loans. The third objective is the construction of annual indexes of the mortgage-debt situation. . . .
>
> In the collection of the mortgage data an examination was made of every mortgage on file in the county courthouse. In 1853 the county was organized

[97] W. G. Murray and F. L. Garlock, "Farm Mortgage Debt in Iowa," Iowa Agr. Exp. Sta., Current Economic Series *Report* 6 (Ames, 1927), pp. 3–4.

[98] Murray and Garlock, "Debt in Iowa," p. 13.

and arrangements made for recording deeds and mortgages. In January of the following year, 1854, the first mortgage appeared. The number of mortgages recorded from this date to Jan. 1, 1932, totals 25,993, an average of 334 mortgages a year for the 78-year period covered by the study.[99]

In conclusion Murray stated:

On the basis of information obtained from farm mortgages in Story County, the debt situation at the close of 1931 was a matter of grave concern to many borrowers and lenders.[100] Even after $5,966,459 in mortgage debt had been released through defaults in the years 1921-31, there still remained on Dec. 31, 1931, a total of $18,074,673 outstanding on 59 percent of the land.

The gravity of the situation is made apparent by a comparison of conditions at the close of the year 1898 with those at the end of 1931. In Story County in December, 1898, the average price paid farmers for corn at the local shipping point was 25 cents a bushel, for hogs, $3.04 a hundred. In December, 1931, corn brought 24 cents a bushel and hogs $3.48 a hundred. Thus the prices at the close of these two years for the two principal products of the farm were nearly the same. With respect to the debt situation, however, there was a marked difference. The outstanding mortgage debt of the county at the close of 1898 was $2,994,109 as compared with $18,074,673 thirty-three years later. This difference was largely one of debt per acre, $16.94 in 1898 and $86.50 in 1931. The acreage under mortgage was approximately 50 percent in the early year and 59 percent in the recent year.

With these figures in mind, it is reasonable to point to the load of debt carried by farm owners in recent years as a salient factor in the agricultural depression of these years. Reference was made in the discussion of short time changes to a sequence of prosperity and depression, the severity of the depression being determined by the load of debt contracted in the previous period of prosperity. Viewed in this light, the depressions of the seventies and the years 1921–31 were unusually severe. The depression of the nineties, however, in which a drastic decline in prices occurred, was not so severe on farm owners because debt on land had not been increased much in the preceding years.[101]

OHIO

The extent to which life insurance companies held farms acquired through foreclosure of mortgage loans attracted the attention of Minneman and Morison in 1929 and 1930. Morison stated:

The large number of farm mortgage foreclosures in western Ohio during recent years is of concern to present and prospective owners of farm real estate and to the various financial institutions making farm loans. Loans made by Life Insurance Companies represent an appreciable portion of the total farm loans in Ohio. . . .

. . . On Jan. 1, 1930, sixteen life insurance companies owned farms in Ohio. . . . Included in the 418 farms owned Jan. 1, 1930 was a total of 36 farms under sales contract. . . .

[99] W. G. Murray, "An Economic Analysis of Farm Mortgages in Story County, Iowa, 1854–1931," Iowa Agr. Exp. Sta. *Research Bulletin* 156 (Ames, 1933), pp. 365, 366, 367. In the same year, a similar study was issued by the Nebraska Agricultural Experiment Station: E. H. Hinman and J. O. Rankin, "Farm Mortgage History of Eleven Southeastern Nebraska Townships 1870–1932," *Research Bulletin* 67 (August 1933).

[100] As this bulletin was being written in 1932, a financial depression more serious than any yet experienced descended on debtors and creditors. Prices for farm products declined from 88 in 1931 to a probable average of 55 for 1932. From January 1 to December 1, 1932, a total of 75 farms were sold by the sheriff at foreclosure sale. This is the largest number of foreclosures in any one year in the history of the county.

[101] Murray, "Story County, Iowa," pp. 410–11.

. . . a total of 353 of these foreclosed farms were owned by six of the companies. The total acreage owned by all companies more than doubled during 1928 and increased again an almost equal amount in 1929. . . . shows the total number of acres owned on Jan. 1, 1930, the greatest concentration being in Defiance and Paulding counties and the next in Union, Hardin and Logan counties. . . . it is apparent that more than three times as many farms were acquired thru foreclosure in 1929 as were so acquired in 1927. The average cost of farms acquired by these companies was $58.62 per acre in 1927, $57.39 per acre in 1928 and $56.53 per acre in 1929. . . .

About June 1, 1929, inquiry was made as to the method of operating farms owned by life insurance companies at that time. It was found that the farms which had gone thru the process of foreclosure were usually in a run-down condition and required considerable repair before they could be satisfactorily rented or offered for sale. In general, the life insurance companies were making repairs and improvements according to the type of operation or time of sale. Farms that were to be cash rented or immediately sold were not being improved to the same extent as those to be operated by hired labor or those to be held for a period of years. Most companies offered their farms for sale continually. The company owning the largest number of farms was an exception.

The company's farm loan correspondents, thru whom loans had been made, were usually responsible for the foreclosed farms, but in a few cases these farms were under direct supervision of representatives from the company's home office.[102]

SOCIAL SCIENCE RESEARCH COUNCIL ON CREDIT STUDY

The Social Science Research Council, as a part of its program of surveying the "Scope and Method" of research in the various subfields of agricultural economics and rural sociology, issued in 1931 its report on "Research in Agricultural Credit, Scope and Method." This report was prepared under the direction of a special advisory committee consisting of John D. Black, Chairman, Harvard University; M. R. Benedict, Executive Secretary, Giannini Foundation, University of California; A. G. Black, Iowa State College; R. C. Engberg, Federal Farm Loan Bureau; F. F. Hill, Cornell University; Norman J. Wall, Bureau of Agricultural Economics; and D. L. Wickens, Bureau of Agricultural Economics.

The objectives of the report were stated:

The purposes of the present report are: To outline the field from the point of view of research; to indicate its place in the general framework of economics and agricultural economics, pointing out relations to other subdivisions of the field; to outline and orient the research already done in the field; and to analyze the methodology of a number of carefully selected projects.

It is thought that this will make available to those undertaking research in this field much of the experience gained from what has already been done as to possible approaches and methods. It is hoped also that as a result of it

[102] F. L. Morison, "Ohio Farm Land Acquired by Life Insurance Companies Thru Foreclosure in 1929," Ohio Agr. Exp. Sta. *Mimeographed Bulletin* 26 (Columbus, 1930), pp. 1, 3, 5, 10–11. *See also* P. G. Minneman, "Large Land Holdings and Their Operation in Twelve Ohio Counties," Ohio Agr. Exp. Sta. *Mimeographed Bulletin* 17 (Columbus, 1929).

the various agencies engaged in agricultural research will be stimulated to undertake a larger and more carefully considered body of research relating to agricultural credit.[103]

A section is devoted to "Definition of the Field" and also to "Basic Principles and Concepts." After a brief summary of past and current research in agricultural credit and on "Sources of Information," the major part of the report is devoted to a suggested list of research projects, including a discussion of methodology for each. The various types of projects are listed under the following groupings: (*a*) The Area Approach; (*b*) The Institutional Approach; (*c*) The Approach by Types of Credit; (*d*) Projects Relating to Particular Operations or Functions Connected With Credit; (*e*) The Approach by Commodities; and (*f*) Miscellaneous.

LOANING OPERATIONS OF A FEDERAL LAND BANK

One of the first comprehensive studies analyzing the loan operations of a farm-mortgage lending agency summarized the experience of the Federal Land Bank of Springfield, Massachusetts. As to the scope of the study, the author stated:

> The study reported in this bulletin represents an analysis of the loaning experience of the Federal Land Bank of Springfield over the 13-year period from the organization of the Bank in March, 1917, to May 31, 1929. It was undertaken by the Bank with the purpose of determining the relative importance of the different factors which have affected loan risks in the past. It was felt that such an analysis would be of assistance in improving the Bank's loaning policy in the future. . . .
>
> Data relative to the farm, the borrower, and the history of the loan were transferred from applications, appraisal reports, and other bank records to cards designed for use with Hollerith mechanical sorting and tabulating equipment. A set of cards was prepared for each of the 20,186 loans made by the Bank from the time of its organization to May 31, 1929. By means of the mechanical sorting and tabulating equipment, it was possible to classify the loans on the basis of any factor appearing on the cards. . . .
>
> For purposes of analysis the counties in each State were grouped on the basis of the agriculture of the individual counties. Complete tabulations of all data were made for each group of counties. Where there appeared to be considerable variability in the data, tabulations were made for individual counties and even for individual townships.
>
> The discussion in this bulletin has been centered around the Bank's loaning operations in New York. Where the relationships between various factors and foreclosures of mortgages differed materially in New York from the relationships found in the other seven States in the First Federal Land Bank District, or from the relationships found in certain groups of counties in New York, mention is made of this fact.[104]

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[103] Social Science Research Council, "Research in Agricultural Credit, Scope and Method," *Bulletin* 3 (New York City, 1931), p. 3.

[104] F. F. Hill, "An Analysis of the Loaning Operations of the Federal Land Bank of Springfield From Its Organization in March, 1917, to May 31, 1929," Cornell University Agr. Exp. Sta. *Bulletin* 549 (Ithaca, 1932), p. 6.

In summarizing the relation between various factors and foreclosures, Hill stated:

From its organization in March, 1917, to May 31, 1929, the Federal Land Bank of Springfield made 20,186 loans. As of May 31, 1929, 96.7 per cent of these loans were still active or had been paid in full. Only 3.3 per cent of them had been foreclosed. . . .

The appraisal of farm real estate is difficult because of the large number of factors which must be taken into consideration. Any factor affecting the returns which the average operator can be expected to make on a given farm, or affecting the desirability of the farm as a place to live, affects the value of the farm from a security standpoint. Since methods are not available whereby the appraiser can measure the relative importance of the various factors involved in a given situation, he is forced to rely upon his judgment. Under such circumstances, there is almost always a tendency to overemphasize some one factor at the expense of others. One appraiser may stress the importance of equity; another, location; and a third, the importance of the personal element. The same yard-stick is applied in all cases without regard to the particular situation under consideration.

The danger of emphasizing a single factor at the expense of all other factors is illustrated by the data in table 59. Of all loans made on farms with tillage land appraised at less than $55 per acre, 4.7 per cent had been foreclosed as of May 31, 1929, compared with an average percentage of foreclosures among all loans in the District of 3.3 per cent. However, only 0.8 per cent of the loans made on farms with tillage land appraised at less than $55 per acre were foreclosed where the farm was located on an improved road, where the house was appraised at $2500 or more, and where the loan was made to an experienced farmer. . . .

The data . . . do not represent an attempt to assign positions of relative importance to the various factors involved in making loans on farm-mortgage security in the Northeastern United States. They are simply intended to illustrate the fact that land appraisal under present methods calls for the exercise of every possible precaution to prevent the over-emphasis of single factors. No one factor determines the safety of a loan. Until more reliable statistics as to farming returns, trends in land values, and the many other factors that affect the safety of long-term loans on farm property are available, and until better methods of measuring the probable safety of a given loan are worked out, successful land appraisal will continue to depend upon the careful well-balanced judgment of the appraiser. However, the data . . . indicate a few of the important factors to be taken into consideration in making long-term loans on farm-mortgage security.

It seems clear that certain classes of loans cannot be made by a loaning agency operating on as narrow a margin as does a federal land bank. Other classes of loans appear to be exceptionally good risks. To the extent that certain classes of loans may be readily classified as good or poor risks, the range within which the judgment of the appraiser must be exercised is limited. The narrower the limits within which the appraiser must depend upon his judgment, the more reliable will be his appraisals.[105]

As to the amount of losses incurred on the sale of acquired farms, the author reported:

The data . . . indicate that loans made on farms of relatively high agricultural value, as measured by the appraised value per acre of the farm, were

[105] Hill, "Federal Land Bank of Springfield," pp. 58, 59–61.

much more profitable than loans made on farms of relatively low agricultural value. The average loan on farms appraised at $60 or more per acre was more than twice as large as the average loan on farms appraised at less than $30 per acre. Therefore, for each million dollars loaned on farms appraised at $60 or more per acre there were only one-half as many loans to make and administer as for each million dollars loaned on farms appraised at less than $30 per acre.

For every 100 loans made on farms appraised at $60 or more per acre there were only one-third as many farms acquired by foreclosure as for each 100 loans made on farms appraised at less than $30 per acre.

The percentage loss on each farm acquired by foreclosure and sold was only one-half as great for farms appraised at $60 or more per acre as for farms appraised at less than $30 per acre.

These relationships were reflected in the net loss on farms acquired by foreclosure and sold, per $1,000 loaned on farms of different appraised values per acre. For each $1,000 loaned on farms appraised at $60 or more per acre the net loss on farms acquired by foreclosure and sold was only $2.14 compared with a net loss of $14.23 per $1,000 loaned on all farms appraised at less than $30 per acre.

Assuming that the original appraised value per acre of the farm furnishes a rough measure of its quality, the Bank might better have sold low-grade farms at a considerable percentage discount on its investment in such farms at the time they are acquired, rather than have held them for any considerable length of time. The average loss on 170 farms originally appraised at less than $30 per acre was $505. The average investment in these farms at the time af acquirement was $2,623. . . . Had the Bank been able to sell them at the time of acquirement at an average price of $2,118 each its loss would still have been only $505 per farm. In other words, the Bank could have afforded to sell these farms at a discount of 19.3 per cent on the basis of its investment at the time of acquirement rather than to have held them for a higher price. Corresponding discounts have been worked out for other groups of farms. . . . The discount which the Bank could have afforded to take for a prompt sale of the average farm originally appraised at $30 to $59 per acre was 13.3 per cent. The corresponding discount for farms appraised at $60 or more per acre was 9.5 per cent. The poorer the farm, as measured by the original appraised value per acre, the greater the discount which the Bank can afford to take at the time of acquirement rather than hold the farm.

It is recognized that it is impossible to sell every farm immediately upon acquirement, even if a substantial discount is offered. It is necessary in many instances to paint buildings and make other repairs before a farm can be sold. This requires time and inevitably increases the Bank's investment. It is also recognized that the farms which were held the longest and on which losses were the greatest were probably the poorest farms. The heavier losses on these farms were not entirely due to an increased investment as a result of holding them for a number of months. The figures presented indicate, however, that it would have been good business, in pricing farms for sale, to price low-grade farms at a substantial discount in order to make a sale rather than hold them for any considerable length of time.[106]

MINNESOTA

The economic distress of agriculture in the twenties and particularly after 1929, led to several studies of farm foreclosure. One of

[106] Hill, "Federal Land Bank of Springfield," pp. 66–68.

the first of these analyzed the number and acreage of such sales in four Minnesota counties. The author concluded that:

On the whole, foreclosed farms had higher indebtedness than those with loans in good standing, partly because more of these farms were purchased at high prices, but perhaps due more to the fact that the operators were men of less ability who often failed to use borrowed funds productively. There is evidence that the farms foreclosed, on the whole, were not so well organized and so well managed as those on which financial obligations were met. Obviously, the personal element is an important factor in the success or failure of any business, particularly in farming, in which the management is usually in the hands of one individual. While the personal factor is uncertain and the ultimate security for a mortgage loan is the land, yet the farm must be viewed as a business concern and its power to yield a profit depends to a great extent on the ability of the operator. Granting credit to a man who can not use it to advantage may result in hardships for both borrower and lender. Greater attention, therefore, must be given to the personal element in granting farm mortgage loans. One difficulty in doing this in the future will be the increased number of farms operated by tenants instead of by owners, who borrow the farm mortgage funds.

Studies of foreclosures in individual counties show clearly that failures among farmers have been relatively greater on the poorer lands. There has been a tendency to overvalue the lands of low productivity. In the past, and particularly during the land boom from 1918 to 1921, land was often looked upon as mere land and poor soils sold at prices often equal to the prices of highly productive soils. The failure of purchasers, real estate agents, and creditors to give adequate attention to differences in productivity of land has been an important cause of failure of farmers to meet financial obligations. To a great extent, in former years, loan agencies limited their loans to a certain percentage of appraised values of the real estate and the appraised values were based to a considerable extent on current sale values of land. If land sold at a high price, the loans would likely be high. If poor land was overvalued the burden of debt was relatively greater on these lands than on the better lands. This policy of creditors was an important factor causing failures among farmers.[107]

SOUTH DAKOTA

The rapid accumulation of "distress" farm lands by lending agencies in the early thirties led Johnson and Steele to analyze this problem in its relationship to future land policy. The authors, in presenting a comprehensive picture of the farm-mortgage and acquired-farm situation in South Dakota, concluded:

In handling the "new public domain" the mistakes of the past land development policies should be avoided if possible. If it can be said that this country has had a land development policy, it has been one of getting the land into private ownership as rapidly as possible regardless of its suitability for the use for which it was acquired. No attempt was made to establish records of its physical productivity in various uses before the land was privately acquired. Hence, the individual owner was forced to learn what the land would produce by costly trial and error methods. Often after years of futile effort he found that because of unfavorable natural and economic

[107] E. C. Johnson, "Farm Mortgage Foreclosures in Minnesota," Minnesota Agr. Exp. Sta. *Bulletin* 293 (University Farm, St. Paul, 1932), pp. 29–30.

factors it was hopeless to pursue the type of farming which he had set up. The "new public domain" is partly the result of such mistakes in the past and every effort should be made to avoid their repetition.

Years of costly trials on the part of individual farmers have furnished a background of knowledge regarding the productivity of the different areas of the state which should be drawn upon in formulating a policy for the disposal of the "new public domain." These experiences can be supplemented with yield records from the experiment stations located in some areas, and with the weather records, which are now available over a long period of years.

A long time program of reconstruction should be planned. It should be based on the type and size of farm business which will be most likely to succeed in each area. These types and sizes can best be determined from the background of experience regarding the natural conditions, and a long time view of prospective economic conditions. An adequate analysis of this kind will require special studies in localized areas. Much of the information is already available, but it needs to be coordinated to show the prospective incomes on individual types and sizes of farms.

With fairly complete information of the kind mentioned in the previous paragraph the "new public domain" could be handled in such a way that the land would be devoted to its most economic use from a long time standpoint. This would mean that no land would be sold as crop land unless it had been fairly well established that a farmer could make a satisfactory living by devoting the land to such a use. Farmers should also be discouraged from buying units too small to produce an adequate income for a farm family.[108]

Country Bank Failures and Farm Credit

One of the aftermaths of the 1920 price deflation was an over-extended condition of large numbers of country banks. This led to numerous bank failures, particularly in the Midwest and South. The extensive harm suffered by farmers and others from these banking difficulties, particularly bank failures, led to the development of numerous theories concerning the causes of banking difficulties. Among these were:

1. Federal Reserve System caused deflation (1920–21) and deflation caused failures — thus the Federal Reserve System was the main cause.
2. Difficulties due to incompetence of bankers, as indicated by:
   a. Loose lending practices.
   b. Inadequate credit analysis.
   c. Lack of adequate primary reserves.
   d. Excess borrowing from other banks.
   e. Lack of secondary reserves.
3. Difficulties due to banks making types of loans for which they were not fitted, i.e., too much long-term credit.
4. Difficulties due to inadequate discount facilities — this theory was advanced chiefly but not exclusively by those who held that liquid-

[108] S. E. Johnson and H. A. Steele, "Some Aspects of the Farm Mortgage Situation in South Dakota and Their Relation to a Future Land Use Policy," South Dakota State College of Agricultural and Mechanic Arts, *Circular* 9 (Brookings, 1933), pp. 56–57.

ity was chiefly a matter of institutional arrangements rather than an inherent characteristic of certain types of credit.

5. Difficulties due to inherent defects of small unit banks. Defects usually cited were:
   a. Inadequate capitalization of banks.
   b. Underpaid and incompetent managements.

In order to ascertain the facts behind the banking difficulties, Fred L. Garlock, then of the Iowa State College of Agriculture and Mechanic Arts, undertook in 1923 a series of studies in this field. The results of the initial Iowa study were reported in the *Journal of Farm Economics,* January 1925, in a discussion of a paper by George W. Dowrie entitled "Did Deflation Ruin the Farmer and Would Inflation Save Him?"

As to whether the farmer was the victim of a deliberate deflation policy Dowrie had concluded:

> . . . (1) That our banking policy was the occasion rather than the cause of the fall in the prices of agricultural products; (2) That the following are probably the principal factors ultimately responsible for the price deflation: (a) Over-stimulated agricultural production, arising out of abnormally high prices and our anxiety to win the war, including unwise colonization and attempts to farm unproductive lands. (b) Extraordinarily good crop conditions in 1920. (c) Extremely high production costs. (d) Dependence upon a hazardous export outlet. (e) Over-extended condition of farmers — heavy obligations incurred for land and equipment on a peak price basis. (f) Failure to provide in "fat" years for inevitable "lean" ones to follow. (g) Investment of profits in land. (h) An overload of inexperienced and unbusinesslike farmers. (i) A very heavy increase in the ratio of farm taxes to farm income.[109]

Garlock's conclusions were presented as follows:

> The statements of all the banks give clear evidence of the credit expansion between the years 1915 and 1920. Both loans and deposits increased from two to three times their pre-war volume, the increase being greater in some banks than in others. But there was considerable variation among the banks in the *relative* increases of loans and deposits. As a general rule, before the war Iowa banks did little borrowing except to reconstitute reserves occasionally at a seasonal ebb of deposits. Consistent borrowing was not common. And it was also customary for the volume of loans to be somewhat below the volume of deposits. Every bank included in the survey, for which these data were available at the beginning of the period, showed this condition in 1914; and the banks were chosen at random. As the period progressed, however, bank after bank departed from the precedent, until in the early spring of 1920 only two remained with loans no greater than deposits. I should mention at this juncture that I have used the term "loans" to signify all loans and discounts, obligations of the United States government, county, state and school bonds, and the item "other real estate holdings" of the banks. As none of them held industrial or railway securities, the total of their credit advances was encompassed. . . . It is significant that the difficulties encountered by the

[109] G. W. Dowrie, "Did Deflation Ruin the Farmer and Would Inflation Save Him?" *Journal of Farm Economics* 7:74–75, (January 1925).

banks later, during the price recession, conformed closely to the relative volume of this borrowing prior to the spring of 1920.

At this time, the spring of 1920, deposits began to fall off, and broke sharply during the fall, the decline continuing until the latter part of 1921. Loans followed slowly, the growing discrepancy between loans and deposits necessitating increased borrowing. I should suggest, therefore, that the increase in Federal Reserve advances to agricultural regions during late 1920, and the high level maintained during early 1921, mentioned in Dean Dowrie's paper, probably were not utilized by the receiving banks in increased accommodation to farmers, but rather went to replace deficits in bank reserves caused by heavy withdrawals of deposits. . . .

. . . As a sidelight on banking practice in agricultural regions, the seasonal variations in loans suggest that a certain proportion of country bank assets are self-liquidating and that bankers plan on making loans during the fall which will be liquidated the following spring and supply funds for the ensuing fall demand. The contention of some economists to the effect that bank liquidity is merely a matter of institutional development would not appear to be warranted by these facts. . . .

. . . A portion of the study dealt with the average actual term of credit on loans in the banks, i.e., the average time elapsing between the making of a loan and its actual cash repayment. In most banks the actual term of credit varied between 15 and 18 months in 1914, fell gradually to about ten months in early 1919, and then rose rapidly, beginning with late 1919 and early 1920, to points which varied at the end of 1921 from 23 months in the bank of lowest term to 67 months in the bank of most "frozen" condition. . . .

. . . During the early years of the price rise, when farm products were in a position of relative advantage, farmers were able not only to pay the debts contracted against current production but also to liquidate a portion of their capital debts held by the banks. Thus the price rise automatically converted what were normally capital advances of the banks into loans of self-liquidating character. This process continued until early 1919, when an upward trend in the term of credit became manifest. Subsequently, when price recession set in, the process was reversed. Loans which, on the basis of the high price level, should have been self-liquidating were converted by reduced prices and dwindled incomes into fixed charges against the borrowers.[110]

Additional results of the initial study were reported in *Research Bulletin* No. 129 of the Iowa Agricultural Experiment Station, entitled "Long Term Loans of Iowa Banks." In commenting on the ability of country banks to make long-term loans, Garlock concluded:

The average extent of deposit withdrawals since 1914 has not been great. It has varied among the banking systems in close relation to the character of the deposits, being greatest where the deposits have consisted largely of demand and bank accounts and least where time and savings accounts have predominated.

The banks have been able to meet these average deposit withdrawals by moderately reducing their loans, cash resources and securities, and by borrowing small sums from other banks.

Occasionally, however, there have been extensive withdrawals of deposits. In supplying the funds needed at these times, the banks have not found it expedient to reduce their loans to any great extent. Instead, they have

[110] F. L. Garlock, Discussion of "Did Deflation Ruin the Farmer and Would Inflation Save Him?" *Journal of Farm Economics* 7:80–81, (January 1925).

allowed their cash resources to be depleted and have borrowed heavily from other banks.

Even in the best of times the average term of bank loans has been nearly one year. The turnover of bank loans was most rapid from 1917 to 1920 and fell to a very low rate after 1920.

The experience of the period 1914 to 1927, inclusive, proves that Iowa banks have not needed to confine their loans to those of short maturities. In actual practice the banks have not so confined themselves, and the demands of depositors have been met by means of very small reductions in the loans.

Since the proportion of time deposits in Iowa banks has been rising rapidly since 1920, and time accounts have been subject to withdrawals of less extent than the other type of deposits, Iowa banks in the future should be able to have their loans of even longer average maturities than was feasible before the war.[111]

The research work in the country banking field undertaken up to this point had indicated the need for developing techniques for the classifying of the assets of banks and for showing changes in the condition of banks. Also it indicated that the condition of banks reflected not only management policy but fundamental conditions affecting the operation of banks.

An opportunity to further develop these research techniques was provided in 1932 when the Arkansas Bankers Association requested that an analysis be made of the causes of banking difficulties in that state. Based on this request, the reports of supervisory authorities, both federal and state, were made available as aids to the study.

This study used the procedures developed in Iowa for classifying loans according to liquidity and used examiners' classification as a means of showing the quality of loans. It also devised a procedure for showing changes in the condition of banks. The more important results were reported in *Bulletin* No. 315 of the Arkansas Agricultural Experiment Station in which Garlock and Gile stated:

> One of the most conspicuous facts disclosed by the data is that many of the closed banks were not prepared at the beginning of the depression for serious reverses such as would result naturally from crop shortages or falling prices. Their liquid assets were pitifully small, a large proportion of the assets was of questionable value as evidenced by examiners' criticisms, and the banks were heavily indebted to other banks. Over-loaded with slow assets, they had no means of meeting extensive withdrawals of deposits even with the aid of city correspondents, for the latter were not disposed to take over the slow assets. Their only hope of survival lay in a continuation of favorable times and in the retention of their deposits. Some of the banks that remained open were in no better condition; they survived only because they did not suffer large withdrawals. But most of the surviving banks had entered the depression in much better condition than was common among the closed banks and could have met greater withdrawals of deposits than actually occurred.
>
> Passing now to the effects of the 1930 drought and the depression, it is apparent that the so called "frozen" condition of banks arose more from the payment of liquid assets to depositors than from any "freezing" or solidifying

[111] F. L. Garlock, "Long Term Loans of Iowa Banks," Iowa Agr. Exp. Sta. *Research Bulletin* 129 (Ames, 1930), p. 254.

of the assets. The volume of losses, real estate, and slow loans increased during the depression, and market conditions rendered many of the securities unsalable. In only a few of the banks, however, was the increase in slow assets as great as the decrease in liquid assets. Closed banks often had nearly as large a volume of frozen assets at the beginning of the depression as when they failed. The main cause of difficulty was the exhaustion of liquid assets in paying depositors. At the time they failed many of the closed banks had virtually no liquid assets over and above the amounts required to settle with correspondent banks. But this was due only in small measure to an increase in the volume of slow assets. . . .

Inasmuch as banks are commonly thought to be engaged primarily in supplying credit for carrying on the current productive operations of their communities, it is significant that a relatively small part of the resources of banks shown in this series was devoted to such purposes. In most of the banks, even in 1929, not more than 25 per cent of the resources were in the form of liquid loans, and in the few banks where this volume was exceeded a large part of the excess was represented by commercial paper, brokers' loans, or loans to buy or hold cotton. Little, if any, more than a quarter of the resources of banks was used to finance crop production or the current operations of business firms. Judging by the composition of the assets, many banks were primarily investment institutions rather than institutions dealing in current agricultural and commercial credits. . . .

It appears likely . . . that an important reason for the small volume of loans used to finance current productive or operating requirements was lack of greater demand for this type of loan from responsible borrowers. Owing to the small number and the frequently uncertain financial status of businesses in the communities which banks were serving, the demand for current business loans from acceptable risks was often very small. Likewise, many farmers who might desire loans for crop production were not regarded as acceptable risks. In addition, the banks often had large accumulations of time and savings deposits which probably gave them a lending power far in excess of what their communities could absorb for use in current productive operations.

Whatever the explanation, nearly all of the bankers used most of their funds for purposes other than current local financing. It was the use made of the funds not employed in current local financing which constituted the principal difference between surviving and closed banks. Surviving banks held large cash reserves and large amounts of United States securities but only a small volume of slow loans. Closed banks held small cash reserves and small amounts of United States securities, but were heavily loaded down with slow loans. This difference led in turn to another difference which had an important bearing on the later histories of the banks. With their large holdings of cash and United States securities, the surviving banks could meet nearly all seasonal requirements from their own resources so that they were able to hold their borrowing power in reserve for protection against emergencies. The closed banks, however, had so small a volume of liquid assets that they customarily were forced to borrow heavily to meet seasonal needs, and they had little additional borrowing power to fall back on when adverse conditions developed.[112]

As a result of the study in Arkansas, much improved techniques were developed for a study of Wisconsin banking difficulties which

[112] F. L. Garlock and B. M. Gile, "Bank Failures in Arkansas," Arkansas Agr. Exp. Sta. *Bulletin* 315 (Fayetteville, 1935), pp. 54–55, 57–58.

was undertaken in 1935. In this study, the experience of banks with various kinds of loans and securities was analyzed more thoroughly than in earlier studies. This provided a basis for an improved classification of bank assets and an improved means of showing the changes that took place in banks during the early 1930's. Garlock summarized his conclusion, in part, as follows:

Country banks in Wisconsin at the beginning of the depression were engaged more extensively in savings banking than in commercial banking. Their deposits consisted principally of time accounts, and their assets were mainly capital loans to local farmers and business concerns and long- and medium-term bonds. Many of the bonds and loans involved such large risks as to indicate that the banks had supplied considerable amounts of venture capital.

The depression brought severe shrinkages of deposits which required that the banks liquidate a substantial portion of their loans and investments. At the same time the security for many of the banks' loans was undermined and large amounts of securities became so depreciated that the banks could not afford to sell them. The assets with which the banks had the best success with respect to both liquidation and losses were call loans, commercial paper, short-term high-grade bonds, and loans used to finance the current operations of farmers and business concerns. Huge losses were sustained on long-term bonds of medium and low grades, and there was considerable loss on the banks' capital loans, particularly those that had not been well protected at the beginning of the depression. . . .

Despite the virtual cessation of new lending and investment and the pressures that were brought to bear on borrowers to reduce their continuing lines of credit, many country banks sustained depletions of reserves that caused them either to close their doors or to invoke stabilization procedures involving waivers by depositors. Still greater numbers were closed or stabilized owing to insolvency. Of the banks operating at the end of 1929 in places of less than 5,000 population, the deposits of all but 19 percent were affected by restrictions of one kind or another before the depression was over, and the deposits of 57 percent were either waived in part to depositors' trusts or left with receivers for final liquidation. . . .

It seems not an unreasonable assumption . . . that the severity of depressions might be reduced materially if the banking system could be made more capable of maintaining its solvency and performing its credit functions under unfavorable conditions. The recession from 1929 to 1933 must have been intensified greatly by the freezing for longer or shorter periods of vast sums of bank deposits, by forced liquidations of bank assets, and by the evaporation of bank lending power over wide reaches of the country. Not only did these developments force large amounts of securities, real estate, and capital goods on the markets, but they also reduced the purchasing power of the public and, perhaps equally as bad, altered the distribution of purchasing power in such manner as to render much of it ineffectual.

The disturbance occasioned by banking difficulties might have been avoided to a great extent by a better organization and management of the banking system. Though it probably was inevitable that extensive insolvency should have developed in the savings- and investment-banking structure under the conditions that arose during the depression, it was not necessary that the commercial-banking structure should have become insolvent also, or that either savings and investment institutions or commercial banks should have made such drastic forced liquidations of assets. Insolvency in the commercial-

banking structure, at least in Wisconsin, was due mainly to losses incurred in the savings and investment operations of commercial banks, and might have been avoided, for the most part at least, had commercial banking been separated from these types of operations. Forced liquidations were occasioned principally by the practice of financing the long-term capital market with funds repayable on demand or at short notice. Had savings and investment institutions been protected against demands for payment, and had commercial banks confined themselves to commercial banking, forced liquidations during the depression would have been greatly reduced.[113]

Emergency Short-Term—Credit Facilities

With the sharp drop in farm income following 1929, acute credit difficulties developed in agricultural areas. In addition to the expansion of funds available for direct seed loan advances, the federal government in the early thirties provided two new types of emergency credit assistance.

The first of these set up facilities for capitalizing agricultural credit corporations. These provisions were:

The lack of adequate commercial banking facilities in rural areas also resulted in demands for Federal aid in strengthening the capital structure of local financing institutions rediscounting producers' notes with the Federal intermediate credit banks. Under the authority of an act approved February 14, 1931, Congress appropriated $20,000,000 to be used, in part, for the purpose of making loans to individual farmers and stockmen for the purchase of capital stock in existing agricultural credit corporations and livestock loan companies or to assist in the formation of new credit corporations where they were needed. Legislation approved March 3, 1932, established a revolving fund of $10,000,000 for a similar purpose. The security pledged by borrowers for these loans was the capital stock of the financing institution. Under the provisions of the above legislation loans were made to 967 individuals amounting to $1,513,024 affecting the capital structure of 54 financing institutions.[114]

The second measure provided for direct loans to farmers through regional agricultural credit corporations, the operations of which have been described:

Section 201 (*e*) of the Emergency Relief and Construction Act of 1932, approved July 21, 1932, authorizes the Reconstruction Finance Corporation to create in any of the 12 Federal land bank districts a regional agricultural credit corporation with a paid-up capital of not less than $3,000,000 to be subscribed for by the Reconstruction Finance Corporation. Such a corporation was established in each of the 12 land bank districts, beginning in September 1932. Except in the seventh district, the entire area of which is served by the principal office of the Minneapolis corporation, branch offices, varying in number from 1 to 4 in the several districts were established. A temporary field office was established in San Juan, P.R., as a part of the Baltimore corporation. A total of 12 principal and 21 branch offices, exclusive of the San Juan field office, were placed in operation during the ensuing months, the last office, at Santa Fe, N. Mex., commencing business on Janu-

[113] F. L. Garlock, "Country Banking in Wisconsin During the Depression," U.S.D.A., *Technical Bulletin* 777 (Washington, 1941), pp. 110, 111, 112.
[114] Farm Credit Administration. First Annual *Report*, 1933 (Washington, 1934), p. 54.

ary 17, 1933. The Reconstruction Finance Corporation subscribed an aggregate of $44,500,000 to capital stock of the various corporations, which was all paid in progressively as needed. . . .

The regional agricultural credit corporations were created for the purpose of meeting a serious need for agricultural and livestock credit. Farmers and livestock men were under pressure from banks and other creditors for immediate payment or at least a reduction of their outstanding obligations. Many farmers were unable to obtain funds for production expenses. Livestock men frequently found it impossible to secure funds for labor and other operating expenses. The enormous volume of applications received by the various offices of the corporations is evidence of the need which existed for their credit facilities.

The initial loans were made by the corporations during the week ending October 14, 1932, when $75,517 was disbursed on 37 loans. During the same week 502 loan applications amounting to $1,502,321 were approved for later disbursement, and 1,935 applications for loans amounting to $2,571,828 were on file at the end of the week awaiting action. . . . From the date of organization to December 31, 1933, the offices received 333,879 applications for a total of $557,958,699 and $245,094,324 was disbursed on 172,945 loans. During the same period repayments amounted to $100,458,342, leaving $144,635,982 outstanding on December 31, 1933.

The emergency Relief and Construction Act requires that all loans made by the regional agricultural credit corporations shall be fully and adequately secured. It is evident that the corporations were not designed to serve as relief agencies for individuals, but rather to relieve a serious credit stringency by making available to the agricultural and livestock industries a timely supply of credit on a sound basis. Further support for this interpretation of the provisions of the act is found in the source of the corporations' loanable funds. Except for the original capital of the corporations, the act provides that funds for lending shall be obtained by rediscounting borrowers' notes with the Reconstruction Finance Corporation, the Federal intermediate credit banks or the Federal Reserve banks. Thus it is necessary that loans made by the regional agricultural credit corporations meet the credit standards and eligibility requirements of the discounting agencies if they are to obtain funds in sufficient volume to meet the demands upon them.[115]

[115] Farm Credit Administration *Report*, pp. 44, 45.

34.

Agricultural Insurance

FARMERS ARE CONFRONTED with an exceptionally wide variety of hazards. As stated by Valgren:

> . . . His buildings, his machinery and equipment, his livestock, and his household goods and supplies, are all subject to damage or destruction by fire, lightning, and windstorm. The use by the farmer of automobiles, trucks, and various kinds of farm machinery, as well as the necessary care and control of his farm animals, gives rise to numerous possibilities of loss in the form of accidental injury or damage to the person or property of the farmer himself, or to the person, property, or interest of others. The livestock on the farm is subject to loss not only from fire and windstorm, but even more frequently from disease or accident. Growing crops may be injured or destroyed by a variety of climatic phenomena, such as frost or freeze, hail, drought, hot winds, excessive rainfall, and destructive storms. In addition to all these climatic hazards there are plant diseases and insect and animal pests that attack farm crops and that temporarily, at least, may prove beyond control.[1]

While the risk of loss from a particular hazard may be, in some instances, reduced by individual foresight and precaution, all risk ordinarily cannot be removed. Where insurance is available, it provides a means for distributing the burden of a few losses arising from the occurrence of one or more of these hazards among participants in the scheme. As defined by Valgren,[2] a "risk" refers to ". . . a greater or lesser probability or chance of loss . . . by some unfriendly agency, usually called the hazard."

Fire Insurance

Farmers, in their search for means of protection against the various hazards which beset their business, first turned their attention to fire insurance. According to Valgren:

> Farmers' mutual fire insurance in the United States dates, so far as known, from the third decade of the nineteenth century. The oldest existing farmers'

[1] V. N. Valgren, *The Insurance Needs of Agriculture* (Processed), U.S.D.A. (Washington, 1931), p. 1. Address before the American Institute of Cooperation, Manhattan, Kansas, June 11, 1931.

[2] V. N. Valgren, "Insurance and the Farm Risk Problem," U.S.D.A., *Agricultural Finance Review*, 7:2 (November 1944).

mutual insurance company began business in 1821 and the second oldest in 1823. There may have been yet earlier farmers' organizations of this kind which disappeared and whose records are not available. . . .

Beginning with 1870 and continuing to the turn of the century, a virtual flood of farmers' mutuals swept over the northern part of the United States from the Atlantic Seaboard to the grazing areas beyond the Missouri. During the latter part of this 30-year period such mutuals also began to appear in some of the more southern States as well as in the Mountain and Pacific States, though in these areas most of the present mutuals made their appearance after 1900. The number of existing farmers' mutuals organized in the decade 1870–79 was 471 — nearly two and one-half times as many as appeared during the preceding 50 years. The next decade, 1880–89, added 328 more of the existing farmers' mutuals; and the final decade, 1890–99, added 433. Thus, out of a total of approximately 1,890 such companies at present in operation, 1,232 or roughly two-thirds began business between 1870 and 1900. . . .

One factor in the rapid development and spread of farmers' mutual insurance following 1870 was undoubtedly the enactment in State after State of laws that pertained specifically and exclusively to farmers' mutuals and that made it easy for an organization of this kind to obtain corporate status. Before such laws were enacted, often called county or township mutual laws, it was necessary either to obtain a special charter from the legislature of the State or to incorporate under some law the requirements of which were often difficult for a local group of farmers to satisfy.

The first farmers' mutual insurance law was enacted in the State of New York in 1857. This law, which some years later seems to have become a model for similar legislation in other States, provided that 25 or more persons residing in any township of the State and owning a total of $50,000 worth of farm property which they desired to insure might form themselves into a mutual assessment insurance company. They could insure only farm or country buildings and goods contained therein, and could accept no risks outside the boundaries of the home township. They could write insurance against loss or damage by fire only.

The New York law of 1857 was repealed for some reason in 1862, but was replaced by a second and somewhat more liberal law in 1879. . . .

To a considerable extent the pronounced upsurge in the farmers' insurance movement, that set in about 1870, was part of a broader farmer movement directed against the so-called middlemen and particularly against the railroads, which were widely charged with taking undue and unfair advantage of the farmers. This farmer movement, or "groundswell" as it has been called, began before the Civil War, but reached its climax during the depression period that followed the "greenback" inflation of the war years.

Among the numerous agricultural or farmers' organizations that arose during this period may be mentioned particularly the Grange or Patrons of Husbandry and the temporarily important Farmers' Alliance.[3] These and other State or national farmers' organizations of that period were very active for a time in the formation of cooperative enterprises among their members, and the Grange more than others seems to have stressed farmers' mutual insurance companies. About 100 of the existing farmers' mutuals retain as part of their names the word Patrons, or Grange, or Grangers, although most of

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[3] For a brief summary of this farmers' movement, see J. L. Coulter, "Organization Among the Farmers of the United States," *Yale Review* (November 1909). For a more comprehensive discussion, see Edward Wiest, *Agricultural Organization in the United States* (Lexington: University of Kentucky, 1923); or S. J. Buck, *The Agricultural Crusade* (New Haven: Yale University Press, 1921).

them have long accepted members without reference to any Grange membership.[4]

According to Dean,* the development of some rather sharp practices on the part of a limited number of commercial insurance companies insuring farm property may have contributed to the aggressiveness and the vigor of the farmers' mutual movement during this period.

The volume of farm business and its exceptional desirability led some managerial genius to conceive the idea that he could largely increase the premiums of his company from this source by sending out traveling solicitors through the country districts, after the manner of the lightning-rod, chain-pump, and patent-churn people. As these solicitors were selected for their glibness and push, rather than for their character or knowledge of the business, and as neither their judgment nor honesty could be trusted, the plan was adopted of taking payment in notes instead of cash. An elaborate application containing a cutthroat warranty was prepared, under which the assured surrendered every equitable right, and became responsible for any overvaluation of his property; and to make assurance doubly sure, every policy contained a printed stipulation that the company should be liable for only three-fourths of any loss that might occur. . . .

. . . In time, the adjustment of losses revealed the full iniquity of this plan, and in every farming community fire insurance came to be regarded as a swindle. . . . The industry of fire insurance became *non-grata* in every state where the farmers had the controlling voice in legislation, and the entire insurance community has been made to suffer ever since for the sins of a few unprincipled adventurers.[5]

Valgren further stated:

If it be conceded that the pronounced development of farmers' mutual insurance that set in about 1870 was due at least in part to temporary abuses by certain of the large commercial companies, as described by Dean, and to the resulting resentment and prejudice on the part of many farmers against all commercial insurance companies, this will hardly explain the continuance and persistent growth of these farmers' mutuals. Their endurance and growth is unquestionably to be explained by the fact that farmers through these organizations have found it possible to provide themselves with needed insurance protection at a very substantial saving compared with the cost of commercial fire insurance. . . .[6]

The first recorded research study dealing with the operations of farmers' mutual insurance companies was begun in 1909 by Valgren while a graduate student at the University of Minnesota. A summary of this study outlines some of the problems associated with conducting a mutual fire insurance company, such as forms to be used, proper initial rates, and reserves. Valgren went on to say:

. . . The companies have doubtless done much to create among the farmers of Minnesota a feeling of fellowship and a community of interest. This is stimulated by the annual and other local meetings of the membership of each

* A. F. Dean, *The Rationale of Fire Rates,* edition of 1900, pp. 106–109.

[4] V. N. Valgren, "Historical Sketch of Farmer's Mutual Fire Insurance," U.S.D.A., *Agricultural Finance Review,* 8:35, 36, 37, 39 (November 1945).

[5] Valgren, "Historical Sketch," p. 40.

[6] Valgren, "Historical Sketch," p. 41.

individual company, and by an annual gathering of representatives organized in a state association. The fifteenth annual meeting of the association was held at St. Paul on the twelfth and thirteenth of last January. Sixty-two companies were represented. Some of the topics discussed were blanks, books and bookkeeping, proper initial premium rates, proper amount of reserve funds and the disposal of these until needed, classification of risks, and proper valuation of high-priced stock on the farm. In the discussion of reserve funds, for instance, it was shown that a decided saving could be accomplished by charging a large enough premium upon the issuing of a policy to avoid making an assessment except upon extraordinary occasions. The practice in this respect is at present, however, very divergent. Initial premiums vary in different companies from ten cents per hundred dollars to seventy-five cents, for a five-year policy. Experience shows that by charging the latter figure, assessments, each of which cost an average company some $200 or $300, can be almost entirely avoided. A majority of the members present favored a reserve of something over $1,000 for a company having about $1,000,000 insurance in force, the percentage of reserve decreasing as the company's insurance in force exceeded that amount. Such discussions are of great value to men who, with all their sturdy virtues, are often deficient in knowledge of the corporate way of doing things, and of business methods and accounts.

The moral hazard, from the very nature of an organization with neighborhood control, is less than with stock companies, or even with mutual companies doing a more general business. It is further reduced by the practice of refusing to insure for more than two-thirds or at most three-fourths of the actual value of the property. The similarity of the risks of these companies, and the knowledge of neighbors as to the condition and value of the property of an applicant for insurance make it possible to apply this rule without difficulty.[7]

Valgren continued his study in this field, at intervals, at the University of Chicago during the years 1911–14. In 1915 he accepted a position as investigator in agricultural insurance in the Office of Markets and Rural Organization of the United States Department of Agriculture. With the opportunity of gathering more comprehensive data under government auspices, he threw away the notes representing the results of his studies in the preceding years and concentrated on developing several detailed surveys of the operations of farmers' mutual fire insurance companies.

In the 1916 *Yearbook* of the Department of Agriculture, there appeared the first over-all study of the operations of these companies in the United States. In this report, Valgren was able to show that farmers, by virtue of the mutual insurance company, were able to make substantial savings. The author stated:

> The total annual saving to the farmers by reason of the relatively low insurance cost in their mutual companies amounts to a very considerable sum. No close estimate of this saving has been attempted, since no special effort has been made to collect lists of commercial rates for farm risks in the different States and in the various sections of these States.
>
> It may be safely said, however, that in a number of the States where farmers' mutual insurance is most highly developed, the average cost of

[7] V. N. Valgren, "Farmers' Mutual Fire Insurance in Minnesota." Note in *Quarterly Journal of Economics*, 25:392–93 (February 1911).

insurance for all these companies in the State has fallen well below one-half of the rates quoted by commercial concerns, or the so-called bureau rates. Some idea, therefore, of the total annual saving to the farmers of the country through cooperation in fire insurance may be readily formed.

The saving of the farmers' mutuals in insurance cost may be credited mainly to two sources. First, the expenses of operation necessarily incurred by large commercial companies for commissions, salaries, dividends, taxes, rents, rating charges, legal assistance, etc., have been either greatly reduced or entirely eliminated. Second, the losses experienced have been fewer, by reason of the practical removal of the moral hazard. The more or less complete removal of this hazard is due to the careful guarding against overinsurance on the part of the farmers' companies, and frequently, even more, no doubt, to the different attitude automatically assumed by the insured toward a company consisting of friends and neighbors from that often wrongfully assumed toward a large business corporation located perhaps in a distant city.

The benefits of rural cooperation in fire insurance can not all be measured directly in money values. There is little doubt that by the reasonable cost at which protection can be secured in these local organizations many farmers have been induced to provide themselves with insurance when they would not have taken this step had it been necessary to pay the full commercial rates. Many a farmer has thus been enabled promptly to rebuild his home, or to replace lost personal property, when had it not been for cooperation in insurance he would have been severely embarrassed financially or perhaps even compelled to give up his farm.[8]

This study was followed by U.S.D.A. *Bulletin* No. 530 "The Organization and Management of a Farmers' Mutual Fire Insurance Company" in which the author stated:

> . . . This bulletin is intended mainly for two classes of readers — those contemplating the organization of a farmers' mutual fire insurance company and those desiring to improve the methods and practices of an existing company. It aims to outline principles and methods developed by successful companies of this kind and to set forth the advanced ideas held by their officers, rather than to discuss the subject theoretically.[9]

The study discussed various organization and management problems under the headings of "Purpose of the Company," "Business Territory," "Membership and Voting Privilege," "Board of Directors," "Officers and Committees," "Applications for Insurance," "Inspection of Risks," "Form and Term of Policy," "Limiting the Size of Individual Risks," "Evils of Blanket Insurance," "Liability of the Company and of the Insured," "Reduction and Cancellation of Insurance," "Fees and Assessments," "Classification of Risks," "Settlement of Losses," "Reserve," "Amendment of By-Laws and Articles of Incorporation," and "Suggestive Organization and Business Forms."

In 1919 Valgren summarized the results of a survey of operating practices based on the returns of 1,161 mutual companies, or about 60 per cent of the companies then in operation. The basis for de-

[8] V. N. Valgren, "Farmers' Mutual Fire Insurance," U.S.D.A., *Yearbook* 1916 (Washington, 1917), pp. 428–29.

[9] V. N. Valgren, "The Organization and Management of a Farmers' Mutual Fire Insurance Company," U.S.D.A., *Bulletin* 530 (Washington, 1917), p. 1, Note.

termining whether the respondent was a "farmer" company was described:

> The organizations here classed as farmers' mutual fire insurance companies are those mutuals whose risks consist either entirely or very largely of farm property. In most States where these companies exist they are recognized as a separate and distinct class of insurance organization and operate under laws which practically limit the insurance written by them to country risks. In several of the Eastern States and some of the Southern States, however, no such distinct class of farmers' mutuals has been provided for by statute. In these latter States, therefore, it is frequently difficult to determine which of the mutual fire insurance companies should be considered farmers' mutuals and which should not. No company has been included in the above or in succeeding figures whose reply indicated that the risks carried were other than farm property to an extent greater than 35 per cent.[10]

While the information obtained in this survey had been used, in part, in developing the two preceding studies, this was the first time that there had been presented, in summary form, detailed data as to the actual operating practices of farmers' mutual insurance companies.

In his "Conclusion" Valgren stressed the value of state associations in these words:

> The preceding summary, while pointing out the prevailing plans and practices among farmers' mutuals, also brings out clearly the variety in such plans and practices. In 16 of the States, associations of mutuals have been organized. These associations hold either annual or biennial conventions at which the officers of the member companies have an opportunity to compare methods and discuss plans for the improvement of their organizations. Such associations should be formed in all States where farmers' mutuals exist. The National Association of Mutual Insurance Companies, which holds annual conventions, is in large measure composed of farmers' companies. These intercompany associations are a powerful influence tending toward the improvement and standardization of the plans and practices of farmers' mutuals as well as of other mutuals that avail themselves of membership in them. While rigid uniformity may not be desirable, a reasonable approach to uniformity in the plans and practices of the farmers' mutual fire insurance companies, at least within a given State, would be a material advantage. The general public would be more easily convinced of the soundness and real value of these companies as a class. The approval and support of the insurance department of the State would be more easily secured than is sometimes the case under present conditions. Financial institutions which lend money to farmers would more readily accept the policies of these companies as collateral, and lastly the companies themselves would find it easier to cooperate with one another in matters of reinsurance or joint insurance, as well as in meeting other problems that arise.[11]

In 1920, at the special request of a committee of the National Association of Mutual Insurance Companies and in close co-operation with that committee, Valgren prepared a draft of a suggested state law providing for the organization and regulation of farmers' mutual

[10] V. N. Valgren, "Prevailing Plans and Practices Among Farmers' Mutual Fire Insurance Companies," U.S.D.A., *Bulletin* 786 (Washington, 1919), pp. 1–2.
[11] Valgren, "Prevailing Plans and Practices," pp. 14–15.

insurance companies. In commenting on the legislative status of these companies at that time, the author stated:

About half of the States already have workable laws upon the subject, and under these laws a large number of farmers' mutual fire insurance companies have been organized, with the result that farm property is more generally insured than is the case where such organizations do not exist, and that the owners of such property are receiving protection at a very material saving in insurance cost. The remaining States either have no laws under which it is practicable to organize a farmers' mutual fire insurance company or have failed in such laws as have been enacted to provide for the type of company that has proven most successful in making available to farmers dependable insurance protection at a minimum of cost. The bill should prove of benefit, therefore, not only to States that have no law upon the subject, but also to States where existing laws are in need of amendment.[12]

There appeared in the same year as the above, the bulletin "A System of Records for Local Farmers' Mutual Fire Insurance Companies." In his conclusion, Valgren stated:

Over 1,500 farmers' mutual fire insurance companies, or more than three-fourths of the total number of such organizations, are relatively small and local concerns. In these local companies the secretaries, who also act as general managers, almost invariably keep the records of their respective companies without the aid of trained bookkeepers or accountants. Where one man is, at the same time, secretary, general manager, and bookkeeper, the emphasis in his selection is very properly placed upon character, good reputation, and practical knowledge of farm risks, rather than upon technical knowledge of bookkeeping. It is not surprising, therefore, that the forms and plans for keeping records now in use by these companies are frequently deficient. In some cases they fail to furnish the information desired by either the directors of the company or by the State insurance departments, while in other cases they involve much duplication of work and of data without any corresponding benefit. A special need of a large percentage of these companies, therefore, is a system of records which furnishes the necessary information and is at the same time as simple and nontechnical as the nature of the business permits.

The system here suggested, while adaptable to all assessment mutuals, has been prepared with a special view to meeting the needs of the numerous local farmers' mutual fire insurance companies. It is believed to embody the methods of keeping records that experience has shown to be most practicable in making available necessary information without imposing needless work or requiring special technical training.[13]

In a comprehensive study of the costs and some of the factors contributing to the success of co-operative fire insurance companies in New York State, Bartlett found that:

Losses are greater in counties having low land values than in those having high land values. This condition may be attributed to differences in types of farming, to greater moral hazards, to greater carelessness, and to negligence on the part of the property owners in these poorer regions. Excessive costs

[12] V. N. Valgren, "Suggestions for a State Law Providing for the Organization of Farmers' Mutual Fire Insurance Companies," U.S.D.A., *Department Circular* 77 (Washington, 1920), p. 2.

[13] V. N. Valgren, "A System of Records for Local Farmers' Mutual Fire Insurance Companies," U.S.D.A., *Bulletin* 840 (Washington, 1920), p. 22.

can be reduced by rejecting bad moral hazards among the present policyholders; by reducing valuations that are too high; by enforcing a more rigid inspection of risks; and by creating greater mutual interest between the management and the policyholders, thru the presentation of the facts concerning fire losses and their payment.[14]

The gradual development of reinsurance among farm mutual associations was referred to in the 1924 U.S.D.A. *Yearbook*:

In the field of reinsurance, farmers' mutuals have been lacking in adequate facilities. In some States local mutuals are now prepared to go beyond their legal territory and write joint or concurrent insurance with companies in whose territories such risks are located. In other States one company may grant reinsurance to another company. In order to meet this situation more effectively, farmers' mutual companies in Iowa, Indiana, and Minnesota, have organized special reinsurance organizations to serve farmers' mutuals. This policy, whereby farmers' mutuals reinsure a part of their risks, will no doubt strengthen and expand the work of the farmers' mutual fire insurance companies.[15]

In 1928 Valgren presented the results of another survey, which permitted a comparison with the results of the first survey, of operating practices of mutual insurance companies, conducted about 10 years earlier. In pointing out the progress during this decade, the author stated:

. . . The total number of such companies has shown but little increase in the past decade, since the instances of consolidation of smaller mutuals has largely offset the number of new organizations. But the volume of their risks, or insurance in force, shows a striking increase.

According to the best figures which it has been possible to obtain, the total volume of risks on the books of 1,911 of the farmers' mutual fire insurance companies as of December 31, 1926, amounted to $9,988,579,744, as compared with a total volume of $5,635,968,039 on the books of 1,883 such mutuals for which statistical data were obtained as of the close of 1916. The business of 1926 was done at the remarkably low average annual cost of about 26 cents per $100 of insurance in force.

This marked increase in volume of risks in force between 1916 and 1926 is accounted for largely by two factors — a growth in membership and an increase in the amount of insurance per member. The latter increase is in turn due in part to higher values of buildings and personal property when stated in terms of dollars and in part to a quantitative increase in insurable property.[16]

Crop Insurance

It seems likely that the first suggestion for a plan of crop insurance was made by Benjamin Franklin. Carey reports:

In 1788 the crops over a large portion of France were destroyed by a severe storm. On hearing of this calamity Franklin wrote to M. Le Veillard,

[14] R. W. Bartlett, "The Organization and Development of Cooperative Fire Insurance Companies in New York," Cornell Agr. Exp. Sta. *Bulletin* 435 (December 1924), p. 20. This idea was further elaborated in 1933 by A. B. Lewis, "Fire Insurance and Fire Losses on Different Classes of Land," *Farm Economics* (81):1955–59 (Cornell University, June 1933).

[15] N. A. Olsen, C. O. Brannen, G. F. Cadisch, and R. W. Newton, "Farm Credit, Farm Insurance, and Farm Taxation," U.S.D.A., *Yearbook* 1924 (Washington, 1925), p. 242.

[16] V. N. Valgren, "Developments and Problems in Farmers' Mutual Fire Insurance," U.S.D.A., *Circular* 54 (Washington, 1928), pp. 1–2.

October 24, 1788, "It must have been a terrible tempest that devastated such an extent of country. I have sometimes thought that it might be well to establish an office of insurance for farms against the damage that may occur to them from storms, blight, insects, etc. A small sum paid by a number would repair such losses and prevent much poverty and distress." These remarks are interesting for they contain one of the first suggestions for the insurance of crops.[17]

The first actual attempts at providing insurance protection against certain crop hazards was that providing indemnities for hail damage. In a report dealing with hail insurance on farm crops, Valgren discussed the origin and development, territorial distribution, cost of insurance, characteristics of the insurance contract, and special problems. As to the growth of hail insurance, the author states:

> The first organization in the United States to write hail insurance on growing crops, so far as official records reveal, was a small mutual concern organized in 1880 by the tobacco growers in Connecticut. This company, for some reason or other, dropped out of existence in 1887, but was promptly succeeded by another hail mutual organized in an adjoining county, which is still doing business. No other exclusive hail companies are revealed by official records earlier than the year 1889, in which year four mutual hail insurance companies were reported from North Dakota.
>
> In the meantime one of the larger joint-stock fire insurance companies had begun to write hail insurance on growing crops. The first risks were written in Minnesota in 1883, while in the following year a small amount of hail insurance was also written by this company in what was then Dakota Territory, in Nebraska, and in Kansas. The State of Iowa and the Territory of Oklahoma were included in the hail insurance territory of this company in 1897, followed by Wisconsin, Texas, and Colorado in 1898.
>
> Although many of these early mutuals proved to be short-lived experiments, by 1900 there were 37 mutual hail insurance companies in existence, located in seven different States, as follows: Connecticut 1, Wisconsin 4, Minnesota 13, Iowa 7, North Dakota 2, Nebraska 7, and Kansas 3. . . .
>
> Considered by States, the number of hail mutuals organized and the number now in existence are as follows:
>
> North Dakota, 13 companies organized and 1 in existence; Minnesota, 25 organized and 7 in existence; Iowa, 18 organized and 6 in existence; Nebraska, 16 organized and 4 in existence; Kansas, 14 organized and 7 in existence; Wisconsin, 8 organized and 4 in existence; Oklahoma, 9 organized and 2 in existence; Montana, 6 organized and 2 in existence; Texas, 6 organized and 3 in existence; South Carolina, 2 organized and both in existence; Connecticut, Michigan, and New Mexico, 1 company organized in each State and each still in existence.[18]

The progress of state governments in providing hail insurance, discussed by Valgren in the preceding bulletin, was summarized by Hoffman:

> With respect to the type of insurer, hail insurance differs from the other types of crop insurance already considered in that it has been undertaken not only by joint-stock companies and mutuals but also by the governments of several states. North Dakota is the pioneer, as well as the leading state in

[17] L. J. Carey, *Franklin's Economic Views* (Garden City, N. Y.: Doubleday, Doran & Co., Inc., 1928), pp. 103–04.

[18] V. N. Valgren, "Hail Insurance on Farm Crops in the United States," U.S.D.A., *Bulletin* 912 (Washington, 1920), pp. 2, 6.

providing state hail insurance, passing its law in 1911. The operation of the law was not satisfactory for several years after its passage and in 1919 it was thoroughly revised. Other states entering the field in recent years are Montana, South Dakota, Nebraska and Oklahoma. During the year 1923, out of a total of nearly eighteen and one-half million dollars received in hail insurance premiums, joint-stock companies collected nearly twelve million, mutuals one and one-half million, and state funds a little over five million of which North Dakota's share was nearly four million.[19]

In 1899, the first attempt at providing "all-risk" crop insurance was tried by a Minneapolis company but the attempt failed. According to Hoffman:

. . . This company, known as the Realty Revenue Guaranty Company, issued in the spring of 1899 a policy, upon application by a farmer, known as an *Optional-sale Contract*. . . .

Upon this application the company issued its contract which, in addition to the provisions in the application, contained the following important points:

1. The company agreed, if the insured desired, to purchase the entire crop insured at $5 per acre, the insured to elect to exercise the option not later than five days after threshing.
2. A premium of 25 cents per acre or 5 per cent was charged for a $5 optional limit.
3. The farmer agreed to cultivate his crops in a husbandmanlike manner.
4. The farmer agreed to deliver his crop to the nearest market, if requested to do so by the company upon exercising his option.
5. The company disclaimed liability due to damage done after September 15th or after crops were harvested.

How this early enterprise in crop insurance fared is not known. If subsequent experience is of any value, however, it must not have fared very well, as the premium was entirely too low.[20]

A comprehensive analysis of the problems involved in crop insurance, and the practical experience to that date, was issued in 1923. In this report, Valgren discussed the farmer's "independence," meaning of "loss" or "damage" in connection with growing crops, quantitative importance of annual damage to farm crops, elimination or reduction of risk, and principles of crop insurance. In the summary the author set forth these observations:

The ultimate form of crop insurance contract in all probability still remains to be devised. The writer ventures, however, by way of summary to emphasize the following principles as fundamental to a sound plan for crop insurance.

1. The insurance must cover only such crop damage as will result in serious financial loss to the farmer. This means that only a reasonable amount of insurance an acre must be written. For establishing such reasonable amount the average yield and price for a series of past years is perhaps the best basis. It means, furthermore, that the acreage of a given crop, if not the entire farm, must be insured as a unit and adjustment made on the basis of average yield of such acreage. The total loss of crop on one

[19] G. W. Hoffman, "Crop Insurance – Its Recent Accomplishments and Its Possibilities," American Academy of Political and Social Science, *Annals*, 117:111 (January 1925).
[20] Hoffman, "Crop Insurance," p. 99.

or a few acres out of a hundred is not a serious loss if the acreage as a whole gives average returns or a substantial part of such average.

2. The insurance must cover any and all hazards which are beyond the farmer's control. Insurance which protects against certain hazards and leaves the insured exposed to total loss from other hazards beyond his control is not real crop insurance.
3. In no case must the insurance protect against loss from carelessness or negligence on the part of the insured. Such protection would involve a moral hazard, the encouragement of which is against the best interest not only of the company but also of the insured and of public welfare in general.
4. The premium, or cost of insurance, must bear a reasonable relationship to the value of the protection that it purchases. This means that the expense item in the expenditures of the insurance organization must be held to a minor part of the premiums collected; that profits, if the organization operates for profit, must be moderate; and that the bulk of the premiums must be available for the payment of current losses and in favorable years for additions to a reserve for the payment of future losses.[21]

Further developments in the "all-risk" field are reported by Green:

In 1917 and again in 1920 and 1921, insurance on grains was written in the spring wheat area. Both of these experiments were unsuccessful. In the years immediately following 1921 some insurance was written on various field crops in the South and some frost and freeze insurance on fruit. This insurance did not prove successful enough to be continued. In 1931 and 1932 a company was formed in Kansas to write insurance on field crops, principally wheat. It failed, largely as a result of the decline in price of wheat. No "all-risk" crop insurance is being written in the United States at the present time, so far as I know.

In 1922, a great deal of public interest was shown in the subject of crop insurance. In January of that year Senator Sheppard of Texas introduced a resolution in the Senate to investigate the practicability and desirability of a bureau of crop insurance. In March of that year, Henry A. Wallace, now Secretary of Agriculture, proposed a method of insuring farm crops. His proposal appeared in Wallaces' Farmer on March 3, 1922. During that year Theodore Price of New York, business man and editor of the magazine "Commerce and Finance," was leading an agitation for crop insurance. In September of that year Senator McNary of Oregon, Chairman of the Senate Committee on Agriculture and Forestry, introduced a resolution calling for a senatorial committee to investigate the subject of crop insurance. A committee was appointed, consisting of Senator McNary as Chairman, Senator Keyes of New Hampshire, and Senator Smith of South Carolina. Public hearings were held in 1923 and a report of the hearings was published. A bill was introduced in the House of Representatives in February 1922 by Representative King of Illinois to establish a government crop insurance bureau. But, with respect to actually making crop insurance available, as Mark Twain said about the weather, nothing much was done about it.

In public life the matter was next brought up most prominently in 1928 by Senators McNary and Bruce, when a Senate resolution was passed requesting the Secretary of Agriculture to report to the Senate upon the extent to which crop insurance would be consistent with sound governmental and economic policy. The report of the Secretary is contained in Senate Document No. 190, 70th Congress, 2d Session, entitled "Crop Insurance."

Among other things, it was concluded in this report that, "It is not

[21] V. N. Valgren, "Crop Insurance: Risks, Losses, and Principles of Protection," U.S.D.A.. *Bulletin* 1043 (Washington, 1922), p. 26.

possible on the basis of existing information to say whether such insurance is practicable or under what conditions it should be issued. Therefore, the first function of the Government with respect to insurance of this character is, in my opinion, to secure the necessary factual basis. This, however, would call for more extensive research than the Department has been in a position to make."

Various other bills relating to crop insurance have been introduced in Congress from time to time. In 1925 the matter was brought before Congress by Senator McNary and Representative Sinclair. In 1927 Senator Bruce and Representative Sinclair again presented the matter to Congress. Following the report of the Secretary of Agriculture in 1928 in response to a Senate resolution, the matter of crop insurance was next brought before Congress in 1929 by Senator McNary and Representative Sinclair. In 1930 the matter was presented to Congress by Senator McNary and Representative Hope of Kansas. In 1931 Senator McNary and Representative Sinclair revived the subject. In 1932 Senator Sheppard again introduced the subject in Congress, and in 1933, Representative Sinclair. In 1935 Senator Sheppard introduced a bill on crop insurance. In January 1936 Senator McNary reintroduced a bill, which he had sponsored for several years, directing the Secretary of Agriculture to investigate all phases of crop insurance. In May 1936 Senator Pope of Idaho introduced a bill to create a Federal crop insurance corporation. The subject of crop insurance has been discussed repeatedly by numerous other members of Congress in the course of their remarks, and has been widely discussed in the public press. It is a subject, therefore, that has had 10 to 15 years of public attention.[22]

In 1936, W. H. Rowe, then in charge of the Insurance Section of the Division of Agricultural Finance in the Bureau of Agricultural Economics, undertook a project aimed at developing an actuarial basis for providing wheat crop insurance. The availability of yield data on individual farms through the records of the Agricultural Adjustment Administration provided a large volume of basic data which could be utilized in arriving at loss experience. After the study was begun, additional funds were made available under the Bankhead-Jones Act and the Agricultural Adjustment Administration supplied substantial clerical assistance in tabulating individual farm yield records. This study furnished the actuarial basis for the wheat crop insurance program authorized by the legislation enacted February 16, 1938.

With the establishment of the Federal Crop Insurance Corporation, the Bureau undertook a program of research on other crops including cotton, tobacco, citrus fruits, and corn.

In May, 1939, in response to House Resolution No. 176 submitted by Fulmer of South Carolina, the Bureau transmitted its report "A Suggested Plan for Cotton-Crop Insurance." This report prepared by the Division of Agricultural Finance was summarized as follows:

> The plan for cotton-crop insurance outlined in this report is comparable in most respects to the wheat crop-insurance program now [1939] being administered by the Federal Crop Insurance Corporation. The State and county agricultural conservation committees already established in other farm programs would be used in the administration of the program.

[22] R. M. Green, "Crop Insurance Problems," U.S.D.A., *Crop Insurance, Selections and Excerpts* (Processed) (Washington, 1936), pp. 23–24.

Under the plan here suggested, a cotton farmer who took insurance would be assured a yield of cotton equal to either three-fourths or one-half of the average yield of his farm. For this insurance protection he would pay a premium based in part on the crop-loss experience of his farm and in part on the crop-loss experience for the county in which his farm is located. Thus each farm would have a separate coverage per acre and a separate premium rate per acre. The premiums and indemnities that are determined in lint cotton might both be increased a certain percentage to provide protection against loss of cottonseed as well as lint cotton.

The plan proposed herein is one for insurance "in kind" with premiums and indemnities being determined in lint cotton and payable in cotton or the cash equivalent. The insurance reserves built up out of premiums would be carried in cotton. Premiums received in cash would be invested in cotton. Claims for losses could be paid by issuing warehouse receipts for cotton, or by selling cotton from the reserve and delivering the cash equivalent thereof. Cotton reserves would not be used to pay obligations arising out of losses on other insured crops.

The plan provides that the premiums charged for insurance shall be adequate to cover the average losses for a representative period of years. It is recognized, however, that losses in any one year may exceed premiums collected and, as a consequence, it would be necessary that either capital or an insurance reserve be provided for the inauguration of such a program.

In view of the many hazards that affect the cotton crop and the large number of farmers who are subject to crop failure, it is believed that a program of cotton-crop insurance would meet a real need and should be a fundamental part of the Federal Government's program for agriculture.[23]

Other Types of Insurance

Prior to World War I (1914–18) there were a number of companies, both mutual and stock, providing insurance on livestock.[24] The disappearance of these companies was noted by Valgren:

The largest number of mutual retirements, considered on a percentage basis, has been among livestock insurance companies. That most of these companies have gone out of business during the prolonged agricultural depression, greatly intensified in the last few years by the general world-wide industrial demoralization, needs but brief explanation and no apology. With their incomes severely depleted, farmers in most cases would no longer consider insuring their livestock, but carried their own risk of loss from disease or accident among their animals. Most of these livestock mutuals therefore simply dried up for lack of business. The remaining livestock mutuals in the United States can now be counted on the fingers of one hand. A noticeable pick-up in the demand for this form of protection is already said to be in evidence in the territory of at least one of these mutuals.[25]

One of the first studies devoted solely to a survey of the amount of insurance carried by farmers was made by Gross and Bosworth, who stated:

This study of insurance attitudes and practices of farm families was under-

[23] "A Suggested Plan for Cotton-Crop Insurance," *House Document* 277, 76th Congress, 1st Session, p. 1. (Prepared by R. T. Baggett and W. H. Rowe in the Bureau of Agricultural Economics, U.S.D.A., and transmitted by Harry L. Brown to the Speaker of the House of Representatives May 2, 1939.)

[24] Nearly all of the farmers' mutuals insure livestock, as well as other property on the farm, against loss through fire or lightning.

[25] V. N. Valgren, "Methods of Farmers' Mutuals," *Journal of American Insurance,* 10:21 (November 1933).

taken to obtain factual material on the subject in order to judge the adequacy of insurance in promoting the economic security of farm family life. It was made in the Lansing area of Ingham county, Michigan, in 1931. The type of farming in this region is diversified. Schedules of 100 owner families and 100 tenant families, selected at random were collected by the junior author.

As to insurance practices, personal insurance was carried by 74 owner families and by only 54 tenants. Fifty-two owner families and 47 tenant families had life insurance. Ninety-eight owner families had property insurance, as against 57 tenant families. The amount of life insurance carried by the owners who had life insurance averaged $3,085 per family, by tenants, $2,646. The amount carried on the owner's life averaged $2,852; on the tenant's life, $2,038. No attempt was made to average the amount of health and accident protection because of the great complexity of the provisions of health insurance policies. The fire protection of owners carrying fire insurance averaged $5,914, of tenants $2,467. Less than 10 per cent of all forms of life insurance was encumbered. The premiums on life insurance averaged for owner families $78.76, for tenants $77.39. The premiums on property insurance averaged for owners $33.84, for tenants, $14.23.

Of the factors that might affect the insurance practices of the farm families, there was apparently no relationship between income and life insurance carried, either in amount or in premium paid. Variations in valuation of farm appeared to be associated with variations in insurance practices of owners.

The younger owner operators, age 30 to 44 years, who had presumably more responsibilities than the older, carried heavier life insurance than the older groups. In the tenant groups, the older operators had higher life insurance. Those families, both owner and tenant, with children under 16, carried slightly more life insurance than the average for their class, if they carried any life insurance at all.

Of the social factors considered, education of the operator was associated with the carrying of life insurance. The family pattern also had a strong influence on life insurance practices, for practically two-thirds of the families followed the example of the preceding generation in carrying or not carrying such insurance.

The carrying of property insurance was a more stable practice than the carrying of personal insurance, for five times as many personal insurance policies as property insurance policies had been allowed to lapse. The reasons given for the lapses were overwhelmingly economic.

There was apparent in the study a lack of adequate economic protection for the farm family of the type provided by insurance. The tenant family with its greater need of protection because of less ownership of property had less protection than the owner family.[26]

The efforts of the farm organizations in providing casualty insurance facilities for farmers were reviewed by Valgren:

Automobile and the other forms of liability insurance are available from a relatively small but increasing number of farmers' mutual casualty insurance companies as well as from capital stock and general mutual casualty companies. Some progress is being made in combining under more comprehensive policies two or more of the kinds of liability protection that farmers need, with some resulting saving in the cost of protection. Generally speaking, this type of protection for farmers, except for their motor-vehicle lia-

[26] I. H. Gross and M. R. Bosworth, "Insurance of Farm Families," Michigan Agr. Exp. Sta. *Technical Bulletin* 133 (June 1933), pp. 30, 31.

bility, has been given very meager consideration either by the farmers themselves or by insurance interests. But the more important general farm organizations, such as the Farm Bureau, the Grange, and the Farmers Union, are increasingly active in many States in providing their members with casualty insurance facilities of the cooperative or mutual type and in inducing members to use such facilities. About a dozen of these farmers' casualty mutuals, including a few that are not promoted or controlled by general farm organizations, have built up substantial memberships as well as financial assets, but this has occurred largely in the automobile departments of these companies rather than in any department that provides either employers' or public liability insurance.[27]

Scope and Methods of Research

The Social Science Research Council, as a part of its program of surveying the "Scope and Method" of research in the various subfields of agricultural economics and rural sociology, issued in 1932 its report "Research in Agricultural Insurance — Scope and Method." This report was prepared under the direction of an advisory committee consisting of John D. Black, Chairman, Harvard University; V. N. Valgren, Secretary, Bureau of Agricultural Economics; M. R. Benedict, University of California; S. Bruce Black, Liberty Mutual Insurance Company; W. I. Myers, Cornell University; J. T. Sanders, Oklahoma Agricultural and Mechanical College; and Hubert W. Yount, Liberty Mutual Insurance Company.

The objectives of the report were stated:

> The objectives of this report are to outline the subject of agricultural insurance as a field of research; to indicate the metes and bounds of this field; to show its relationship to other parts of the general insurance field on the one hand, and to other parts of agricultural economics on the other; and to review from the standpoint of methodology the research done or underway in agricultural insurance, or involved in a list of projects selected for special consideration.
>
> The term agricultural insurance might be narrowed to include only the classes of hazards peculiar to agriculture, such as loss of crops from meteorological or other causes and loss of livestock from disease or accident, since all the other hazards against which the farmer buys or needs insurance may be said to confront other economic groups as well as those engaged in agriculture. The more usual use of the term and the one adherred to in this report, makes agricultural insurance include all the different forms of insurance.[28]

The report contains sections dealing with "Analysis of the Field," "Basic Principles and Concepts," "Brief History of Research in Agricultural Insurance," and "Sources of Data on Agricultural Insurance."

The major part of the report is devoted to a suggested list of projects, including a discussion of methodology for each. The various types of projects are listed under three groupings: (*a*) Projects from the point of view of the insured; (*b*) projects from the point of view of the type of risk and agencies handling it; and (*c*) miscellaneous.

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[27] V. N. Valgren, "Insurance and the Farm-Risk Problems," U.S.D.A., *Agricultural Finance Review*, 7:5 (November 1944).

[28] Social Science Research Council, "Research in Agricultural Insurance — Scope and Method," *Bulletin* 14 (October 1932), p. 3.

35.
Farm Taxation and Local Government

ONE OF THE EARLIEST FARM-TAX PROBLEMS involved the tax exemption granted to purchasers of public lands. Beginning with Ohio in 1803, the federal government provided offsetting grants to the states for the loss of this potential revenue. Hibbard summarizes this situation:

> Congress, being anxious to hasten land sales, sought to relieve the burden of purchasers by obtaining tax exemptions from the states. It was argued by Congressmen that, since under the credit system the deed to the land was really not handed over to the settler until the end of his four year credit period, the state could not force him to pay taxes by selling the land which in reality still belonged to the United States. Since the right of the state to sell land for taxes is the only assurance that collections can and will be made the proposed interpretation on the part of the federal government meant that purchasers on credit would be exempt from a state land tax until the patent was issued.
>
> It was self-evident that the state would not relish the idea of having within its borders a group of citizens possessing property and at the same time paying nothing to the support of the state. As an offset to this condition, Congress voted to give to Ohio three per cent of the net receipts from the sales of public lands, stipulating that the lands sold by the United States were to be free from state and local taxes for a period of five years; and that the money so paid to the state was to be used in road building and for no other purpose.
>
> In 1811 Louisiana was admitted under the same terms, essentially, but with the added requirement that lands of non-resident citizens should never be taxed higher than those of the resident citizens of the state. This seems to have been a stroke in favor of speculators, the belief no doubt being that a contrary policy would discourage the sale of public lands. The same requirement respecting taxation was imposed on seventeen states.[1]
>
> When Indiana was admitted the same specifications were laid down with the exceptions that five per cent of receipts from sales of government land

[1] Louisiana, Iowa, Illinois, Alabama, Mississippi, Missouri, Michigan, Arkansas, Wisconsin, Minnesota, Oregon, Nebraska, Colorado, Utah, Arizona, New Mexico, Nevada. . . . For Colorado, Utah, Arizona and New Mexico, see enabling acts.

was granted and that the state was directed to expend three-fifths of the money for roads and canals, while two-fifths was to be expended under direction of Congress for a road to the state. Mississippi in 1817, Alabama in 1819, and Missouri in 1820 were admitted with almost exactly the same conditions and requirements as Indiana. The amount of the two per cent funds out of which Congress was to build roads to the states within which the land was sold equalled $1,343,000, but a sum more than twice as great was expended in national highways leading from Maryland to Ohio, Indiana, Illinois and Missouri. Thus these states really received directly but three per cent of the net proceeds of the public lands within their borders.

The state of Illinois received the same treatment as Indiana, except that the expenditures were to be two-fifths for making a road to the state and three-fifths for educational purposes.

The grant of five per cent has been made to all the states admitted in recent years. There has, however, been a considerable change in the stipulations as to the use to be made of the funds. Kansas was allowed to use the money for "roads, internal improvements, or for other purposes"; Colorado for "internal improvements." In all the more recently created states the five per cent has been given with the requirement that the money so obtained be kept as a permanent common school fund, the interest only to be spent. To June 30, 1922, the total amount paid to the states, under these provisions, was $16,883,661.75.

By 1825, the conditions having changed, Congress took up anew the question of exemption from taxation of lands sold by the United States. Five years had elapsed since the last sales of land on credit. The states were beginning to demur against the exemptions, and a bill was introduced in Congress repealing the exemption provisions. The bill was lost, although the Committee on Public Lands to which the subject was referred, brought in a favorable report. The Committee expressed a belief that in the past the exemption had promoted sales and made the collections on time sales easier. Neither of these reasons for continuing the plan longer existed. An interesting observation bearing on taxation was made: "In most of the new states with the greatest abundance of real estate, there is very little personal property, and that little requires to be fostered; the consequence of this has been, and must continue to be, that the revenue of their governments has been derived almost exclusively from land taxation."

Memorials continued for twenty years to come from the states asking for the right to tax land as soon as it became private property. However, the years passed and nothing was done to relieve the situation, until Congress recognized the justice of the principle involved by passing an act covering the case in 1847. It had for some time been delayed by being tied to the "Graduation" bill. The Senate Committee in recommending the bill, called attention to the fact that the occasion for requiring the states to exempt federal land from taxation had passed with the credit system of sales. Some years before this several new states had been admitted to the Union. To these states had been granted the usual five per cent of receipts from land sales, but they were not required to exempt land from taxation for any period after its sale. The question of exemption of land from taxation for the five years subsequent to sale by the federal government became unimportant as time passed, since about all the land in the states so restricted was sold and the five year period was over long before these later attempts to have the restriction removed. Thus the problem solved itself.[2]

[2] B. H. Hibbard, *A History of the Public Land Policies* (New York: The Macmillan Co., 1924), pp. 84–87.

Early Farm Organization Views on Taxation

In the various early farm movements, tax problems were of much concern to farmers. Proposals for tax reform were many and varied. Drew reported:

> The most famous of their "demands," which has served as the model for both national and state organizations, is the St. Louis platform, adopted by the "Southern" Alliance, in conjunction with the Knights of Labor, on December 6, 1889. This platform, with the changes made by the annual meeting at Ocala, Florida, in December, 1890[3] . . . included the following:
>
> 5. Believing in the doctrine of "equal rights to all and special privileges to none," we demand that taxation, national [or state][4] shall not be used to build up one interest or class at the expense of another.* We believe that the money of the country should be kept as much as possible in the hands of the people, and hence we demand that all revenues, national, state [or county], shall be limited to the necessary expenses of the government economically and honestly administered.[5]

Drew further stated:

> The "Northern" Alliance adopted a platform at the same time that the preceding was prepared. I give this also, because on these two documents the leaders in the political campaign of 1890 relied for guidance. . . .
>
> 3. We favor the payment of the public debt as rapidly as possible and we earnestly protest against maintaining any bonds in existence as the basis for the issue of money.
> 4. We favor a graded income tax, and we also favor a tax on real estate mortgages.
> 5. We demand economy and retrenchment as far as is consistent with the interests of the people in every department of the government, and we will look with special disfavor upon any increase of the official salaries of our representatives or government employees.
> 6. We favor such a revision and reduction of the tariff that the taxes may rest as lightly as possible upon productive labor and that its burdens may be upon the luxuries and in a manner that will prevent the accumulation of a United States Treasury surplus.[6]

Drew's study then proceeded to classify the attitudes of the various bodies on tax matters and presented the following table (p. 994) which indicates by *X* that a definite stand had been taken in favor of the specified measures.

Drew went on to say:

> The idea that "the tariff is a tax" has only very lately made much headway among the farmers of the North and West. The California and Indiana State Alliances make no reference to the subject in their platforms of 1890. The Grange, in 1889, mumbled over the subject in phrases that would do

* Insert after this: "We further demand a removal of the existing heavy tariff tax from the necessities of life, that the poor of our land must have. We further demand a just and equitable system of graduated tax on incomes."

[3] F. M. Drew, "The Present Farmers' Movement," *Political Science Quarterly,* 4:291 (June 1891).

[4] Omitted in 1890.

[5] Drew, "The Present Farmers' Movement," p. 292.

[6] Drew, "The Present Farmers' Movement," pp. 292, 293.

	Income tax	Tariff revision	Tax on evidences of debt
Grange		X	
"Northern" Alliance	X	X	X
"Southern" Alliance	X	X	X
Colored Alliance	X	X	
Mutual Benefit Association	X	X	
Patrons of Industry		X	X

credit to a professional politician; and the Mutual Benefit Association followed the same lead. Whether or not the "Southern" Alliances referred to the tariff in the St. Louis platform, is purely a matter of inference, and the Ocala plank is not very radical. But the Minnesota trump gives no uncertain sound:

"We demand that the war-tariff, which has too long survived the object of its creation, shall be radically revised, giving very material reductions on the necessaries of life, and placing raw materials upon the free list, to the end that we may compete with the world for a market; and that such luxuries as whiskey and tobacco shall in no manner be relieved from internal taxation, till the high protection tariff has been wholly divested of its extortions."[7]

Minnesota also asks for laws that "will make the hidden property pay equal taxes with the visible property." In a number of the legislatures, efforts are making now (the first quarter of 1891) to enact measures which shall secure the listing for taxation of notes and other evidences of debt, by requiring a tax-assessor's stamp on the same as a necessary preliminary to legal collection. Taxation of mortgages is emphatically demanded from all sides, and the Massachusetts plan for effecting this is in good repute.

General Superintendent Humphrey, of the Colored Alliance, in his annual address at Ocala, came out distinctly in favor of a single tax on land. The Grange, on the contrary, expressly condemned the land-tax in 1889.[8]

First U.S.D.A. Tax Study

In 1897, the Division of Statistics of the U. S. Department of Agriculture, issued Circular No. 5, entitled "Local Taxation as Affecting Farms." In transmitting the report to J. Sterling Morton, Secretary of Agriculture, Henry A. Robinson, Statistician, stated:

I have the honor to transmit herewith, for publication, a report on local taxation as affecting farms, which is understood to be the first report of this kind in substance that has been prepared. . . .

I desire to acknowledge the valuable suggestions and counsel in the preparation of this report given to me by Thomas G. Shearman, esq., of New York, who has for years been an expert in questions of taxation.

[7] Declaration of Principles, Ninth Annual Session, 1890.
[8] Drew, "The Present Farmers' Movement," pp. 295, 297–98.

In indicating the reasons for the investigation, the report stated:

One remarkable peculiarity of the whole system of local taxation as it exists to-day is that, generally speaking, though of course with many exceptions, the system works badly and most unjustly toward farmers in those districts where the law is most faithfully, intelligently, and efficiently enforced. . . .

. . . A careful investigation into the reasons for this failure of methods of taxation has long been desired, and has been the subject of much consideration in this Department and elsewhere. . . .

. . . The Secretary of Agriculture therefore directed the employment of a few experts to make a thorough investigation in purely farming districts of those facts which need to be known before any intelligent discussion of this subject can be had. They were instructed to visit as many farms as possible within the short period allowed to them and personally to inquire and estimate the value of all visible property upon each farm.

In compliance with these instructions the experts personally visited 1,114 farms in 1895, selecting the extreme eastern and western sections of the State of New York. They obtained from the owner of each farm his personal estimate of the actual market value of his entire visible property, separating buildings from land and also separating from the natural value of the land in its primitive form the value given to it by cultivation, for the purpose of studying the possible effect of that provision in the constitution of California of 1879 which directs that cultivated and uncultivated land shall be assessed alike, which provision has been very properly interpreted by the courts as meaning that the most highly cultivated land is to be assessed no higher than it would be if it were absolutely without cultivation.

The conclusions reached by this investigation were summarized:

The present investigation, for reasons already stated, has not been especially directed to an inquiry into the effect of the personal property tax. That question has been thoroughly discussed elsewhere, upon statistics otherwise procured.

The statistics now furnished are, however, the only ones of which the Department is aware which show from actual facts the bearing upon farmers of taxes upon the entire value of real estate, including improvements, as compared with the taxing of the mere value of the land, in accordance with the idea of the constitution of California, on an uncultivated basis.

These statistics show that if farms were assessed only at their strictly unimproved value, that would be less than 40 per cent of the improved value, while, on the other hand, an assessment of city lots upon their unimproved value would amount to rather more than 58 per cent of the improved value.

The great advantage which would accrue to the farmer by this change is manifest from this simple statement, but in order to make it perfectly clear it is necessary to give a further explanation.

Supposing a State to exist in which the entire value of the real estate were equally divided between cities and farms, then, under the system of taxing real estate at its full value, if taxes for $1,000,000 were levied on real estate the cities would pay $500,000 and the farms $500,000.

But if the assessed value of real estate were in each case reduced to the actual value of the land, excluding buildings, improvements, and cultivation, the cities would pay $597,000, and the farms would pay $403,000, making a reduction of 19.4 per cent in the burdens on the farm.

Double Taxation and the Progressive Land Tax

At the turn of the century, the question of double taxation was debated in agricultural circles. In discussing this problem, Taylor stated:

> This difference between net rent and interest is due to many causes. Many of these causes have already been discussed in the chapter on the price of land; but we wish to emphasize especially the influence of double taxation in this connection. Double taxation, the taxing of both the farm and the mortgage upon the farm, tends to increase the difference between the rate which must be paid upon the loan and the returns received upon investments in land. The man who lends money upon a mortgage wants at least as large a return as if he had purchased the land himself. Had the man who lent the money purchased the land and rented it, he would have paid the land tax out of the net rent. If he lends the money and has to pay tax at the same rate on the mortgage, he will demand interest equal, at least to the net rent of that proportion of the farm represented by the face of the mortgage. This means that the farmer will have to pay interest equal to the net rent and then pay the land tax besides; thus paying more in interest and in the tax, by the amount of the tax, than he would have paid as a tenant. To tax a farm mortgage is, therefore, to tax a farmer for using the mortgage as a means of acquiring landownership.[9]

In a subsequent edition, Taylor discussed the problem of progressive taxation:

> While double taxation retards the farmer in acquiring landownership, there are forms of taxation which facilitate this rise in his status. Wherever there is a tendency for wealthy men to buy farm after farm from their superabundance of income, their bidding against the farmers drives the price of land too high and thus forces men to remain tenants who would be better farmers, better citizens, happier because they are paying out on a purchased farm. To discourage this outside competition which inflates prices and depresses farming, a *progressive* land tax is suggested. The essence of this tax is that the more land one owns beyond one farm of a specified maximum area, varying with the quality of the land, the higher the tax rate which is levied upon the land. When properly administered such a tax will tend to keep the land on the market for those who wish to use it at a price not so far from its use value, and in this way facilitate land buying on the part of farmers. It is not at all necessary, in order to secure this result, that the tax be confiscatory. A slight discrimination against large holdings is sufficient to produce the desired result.[10]

New Interest in Tax Problems After 1920

For approximately a quarter of a century up to 1920, farm commodity prices and income had been advancing. This situation had made it possible for farmers to absorb the increasing state and local governmental costs without any appreciable sense of their being out of line with other expenditures. Following the sharp drop in farm commodity prices and net farm income in 1920, however, the problem

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[9] H. C. Taylor, *An Introduction to the Study of Agricultural Economics* (New York: The Macmillan Company, 1905), p. 225.

[10] H. C. Taylor, *Agricultural Economics* (New York: The Macmillan Company, 1919), pp. 235–36.

of the farmers' tax burden again received increasing attention. The rapid rise of farm real estate taxes during and immediately after World War I (1914–18) reached such a height that, with the post-war drop in income, farm taxation assumed the aspects of one of the major farm problems.

In 1921 the Illinois Agricultural Association appeared before the Illinois Tax Commission to protest against increased land valuation for taxation.

In the following year, the same organization issued a report "Taxation of Farm Lands in Illinois, The Administration of the Present Tax Laws." That pamphlet is a collection of papers on taxation of farm lands by William H. Malone, George A. Fox, and John C. Watson. That report stated:

> Early in the year 1921, the Illinois Agricultural Association began the study of tax problems, particularly as they affect farmers in the State of Illinois. The results of its earlier studies were presented to the Illinois Tax Commission late in 1921. Constant attention has also been given to the revenue sections proposed by the Constitutional Convention. Other investigations of tax problems and of the administration of tax laws in Illinois are being made or are contemplated. It is our purpose, from time to time, to present information on these problems to the taxing authorities of the State and counties, to the farmers, and to the general public.
>
> Revaluation of all real estate, whether land or town and city lots, will be made by assessors in 1923. The action of the State Tax Commission, in each of the last three years, in increasing the valuation of land without corresponding increase in the valuation of any other class of property, is a reminder that further action of this nature may be attempted. Powerful interests are known to be urging a further shift of taxation to land. It is highly important, therefore, that farmers keep well informed on tax problems.[11]

The results of the tax campaign to reduce the tax load on farm lands made by the Illinois Agricultural Association are reported by O'Brien:

> As a result of the association's work the reduction in state taxes on farm lands secured in 1922 totaled $557,217, or more than twice enough to pay the entire expenses of the association for that year. A saving of $257,107 was made on the 1921 taxes.
>
> If the 1920 valuation of farm lands for state taxes had been allowed to stand unchanged in 1921 and 1922, the farmers of Illinois would have paid $1,071,464 more state taxes than they actually did pay.
>
> To understand how these reductions were secured, it is necessary to go back to 1919 when the Illinois Tax Commission was established. One of the duties of this commission, as delegated by the legislature, is to equalize for purposes of state taxation the county assessments as made in each county in the state for county tax purposes.
>
> In 1919 this commission equalized these county assessments by increasing the total valuation of farm lands $22,707,396, without putting any increase upon any other kind of property.
>
> In 1920 the commission again "equalized" the county assessments by adding a general increase of $112,058,483 to the county assessed valuation of farm

[11] Illinois Agricultural Association, "Taxation of Farm Lands in Illinois" (May 1922), p. 1.

lands. Again it failed to make any increase upon any other class of property. This arbitrarily added another $448,233 to the total of state taxes farmers had to pay.

Polleys' Report

In making this arbitrary increase the commission had little or no information of its own to show that the county boards of equalization or the local assessors had fallen down on their jobs. No such comprehensive information has ever been gathered by the state of Illinois.

What it did have, mainly, was a report made to it by T. A. Polleys, tax commissioner for the Chicago and Northwestern Railway, showing that farm lands in the twenty-two counties through which this railroad runs had been assessed the year before at only 35.17 per cent of their true value, as determined by the average of 8252 farm sales from 1915 to 1920, figures being obtained from transfer records.

Applying this ratio to the entire state, farm land assessed at $66.10 an acre average had a true sale value of $187.91 an acre. . . .

One of the main points of their argument was that Mr. Polleys' values included the highly inflated values of 1919 and 1920 but did not take into consideration that, as a result of the collapse of the boom and sharp fall in prices of farm products, land had greatly fallen in value.

The results secured were that the tax commission increased the assessment valuation only about fifty-five million dollars on farm lands instead of the $112,000,000 as projected.

In 1922 Mr. Polleys again had figures to present. But this year the farmers were ready. They had reduced valuations to the unit basis of acre of farm land, city lot and mile of railway track. Then they had gone back for twenty years and analyzed the valuations upon which taxes were paid year by year on each of these units. This was done for every county, for the state as a whole, for Cook County — which includes Chicago — and for the state other than Cook County.

They showed that putting state valuation on a unit basis, in these twenty years the full tax value of a mile of main track railway without buildings had increased 10.11 per cent, a mile of second main track had decreased 22.52 per cent, a mile of side track had decreased 19.05 per cent, whereas a town or city lot with improvements had increased 24.56 per cent.

Meanwhile in these same years an acre of farm land with improvements had been increased in value for state tax purposes 55.26 per cent.

It looked as though over a period of years the tendency was more and more to shift tax burdens to farm lands.

So the farmers asked for a reduction of 20 per cent in valuation of farm lands for state tax purposes. The tax commission granted a 6 per cent reduction.

When the state raised the tax values of land for state purposes one year, county values would be boosted up to the same point for county tax purposes, and there the values would stay.

It was high time that the association take another step and go into tax matters right in the counties, where assessments are made and tax values determined. More especially, since the state taxes often comprise only one-eighth to one-twelfth of all taxes a farmer pays.

It didn't take long to discover that in many counties farms were paying taxes upon a higher percentage of their sale value than was city property.

In about half of the counties investigated it was found that farm land and city property were being assessed on substantially the same basis.

But in twenty-five counties where inequalities clearly existed, the county

Farm Bureaus asked for a hearing before the county boards of review, and the farmers asked that in equalizing the 1923 valuations, town property and farm lands be assessed on the same basis.

In eighteen of these counties the tax officials, after going over the evidence, did order such a revaluation, either wholly or in part. In some the tax value of farm lands was reduced 10 to 33 per cent; in others the value of city property was increased 10 to 50 per cent.[12]

In a poll of farmers' views on tax reform, made in 1923, it was reported:

What do Iowa farmers want in the way of tax reform? A good many matters of marked importance in this field will come before the general assembly that meets next winter. Wallaces' Farmer has been taking a survey of farm opinion on some of these points. Over three thousand farmers have already registered their opinions.

Later returns, of course, will show in a more definite manner the attitude of the farmers on the points at issue, but the vote up to the present time has some significance. It shows definitely that farmers do not want a county assessor substituted for the township assessors; that they approve of the election rather than the appointment of assessors, and that they demand that earning power of farm land rather than reputed selling price be made the basis of valuation of farm property for the purposes of taxation. The vote indicates also a strong leaning toward the establishment of a state land titles system that will do away with the abstracters, and shows a slight leaning toward the adoption of a state income tax.[13]

Ely, viewing the rising trend in tax levies with great alarm, summarized his views in 1924:

Taxes on farm lands are approximating the annual value of the land, and if the movement continues will result in confiscation and state tenancy.

The increase in taxes is due to increased public expenditures, largely for social welfare; and these are not likely to decrease.

The diffusion of benefits from these expenditures have not been accompanied by diffusion of the burden of taxation; the larger revenues needed have been provided chiefly by increased direct taxes.

Indirect taxes on unnecessary expenditures must be resorted to to supplement direct taxes. These are capable of yielding enormous sums for government revenue and need not be expensive to collect. They also encourage thrift, by putting on spending part of the burden that now falls on saving.

To relieve the distress of the farmers other measures are necessary than those that have been mentioned.

First of all, and above all, we need a classification of land to accomplish a two-fold purpose.

The first purpose is to tax each kind of land in accordance with its nature and in accordance with the desired social ends in land utilization.

Taxes on forests if levied upon the annual selling values are destructive.

Taxes upon mining property as at present generally levied stand in the way of proper utilization of this particular kind of land. Space does not permit us to enter this aspect of the taxation of land.

Still more important, however, is the second purpose to be accomplished by land classification; namely, to put each kind of land to its appropriate use.

[12] H. R. O'Brien, "Illinois Gets the Tax Facts," *The Country Gentleman,* 89:12 (February 16, 1924).

[13] "Poll Shows Farm Views on Tax Reform," *Wallaces' Farmer,* 48:1032 (July 27, 1923).

At the present time a great deal of land that is not suitable for farming, or to express it as we do in economics, submarginal land, is being used for farming purposes. The farmers are producing at a loss and no price fixing will bring relief.

While they are producing at a loss, yet at the same time they throw their products on a glutted market and injure those who are producing on good agricultural land.

When we have the three G's — good farming by good men on good land — and when we have a just system of taxing farm lands we shall have prosperous farmers, putting their products on the market at prices which are compatible with the prosperity of the consumer.

Sometimes we think that those are right who call us a nation of economic illiterates. The great need as preliminary to a sound program is straight thinking.[14]

Federal Research on Tax Problems

Meanwhile, the Bureau of Agricultural Economics had been organized and a program of research in the field of farm taxation was initiated.

In October 1922, a questionnaire was sent to crop reporters asking acreage on the reporter's farm and for taxes (real, personal, and total) paid in 1913–14 and in 1921–22. Usable replies were received from 3,248 farms and these provided the data for the Bureau's first statistical report dealing with farm taxes, issued in March 1923. This was a report showing tax per acre on farm lands, by states, for the two periods. In its release, the Bureau stated:

> Taxes on farm lands per acre increased 126 per cent as an average for the whole country from 1913–1914 to 1921–22, the U. S. Department of Agriculture has recently ascertained. Thus during eight years these direct real estate taxes have considerably more than doubled. All State, county, and local assessments on real estate are included in the tax total, and the department's report is based on statements made by crop reporters who reported their actual tax payments on the same lands in both periods.
>
> Of the 48 States Colorado has the highest average rate of gain, 240 per cent. Every other State is below a gain of 200 per cent in tax per farm acre. Nine States, including Colorado, are each above 150 per cent. No State has reduced the average rate per acre. At the lower extreme 17 States have each gained less than 100 per cent.[15]

This report which showed that the tax per acre in Indiana had increased from $.90 to $2.09, an increase of 131 per cent during the 8-year period, created something of a furore in that state. Protests were made to the White House, and subsequently a revised figure was issued which changed the per acre figure for Indiana to $.67 for 1913–14 and to $1.60 for 1921–22. This incident served to make the Bureau cautious in making further measurements of farm real estate

[14] R. T. Ely, "Robber Taxes," *The Country Gentleman*, 89:25 (July 12, 1924).

[15] "Taxes on Farm Lands Show Big Increase," U.S.D.A., *Weather, Crops, and Markets*, 3:251 (March 17, 1923).

taxes, and it was not until the fiscal year 1926, that the Bureau reported:

> The division has begun the preparation of a dependable annual estimate of the volume of farm taxes throughout the country, and has received the cooperation of county and town officials in almost every State. This study when completed will provide a current picture of farm tax burdens, together with considerable information as to reasons for recent changes in tax levels in various sections.[16]

The first annual report of the Bureau of Agricultural Economics in 1923 records the fact that:

> Taxation of farm real estate involving taxes levied, capital value, assessed value, gross and net income from land and the changes in these various factors over a series of years form the subject of a study begun during the year. Material for this study was obtained in part from county records and in part through a questionnaire to owners of cash rented farms, as this class of farms offers a peculiar opportunity to obtain gross and net income from the ownership of land.[17]

This study was started in 1922 by J. T. Sanders of the Division of Land Economics and later completed in the Division of Agricultural Finance. Data on farm real estate taxes and income from cash-rented farms in 1919 were obtained from a total of 3,221 farms in 31 counties in 26 states. That study, published in 1925, concluded:

> A large percentage of farm rents in many counties was paid out in taxes in 1919, when rents were higher and taxes lower than they are at present [1925]. There is reason to believe, in fact, that since 1919, taxes have absorbed all the income from rent on many of the less favored farms. Excessive farm real estate taxation results from the attempt to apply sale value as a uniform measure of the tax to classes of property yielding differing rates of return and varying in the difficulty with which they are reached under general property tax methods. The solution of this part of the problem may finally be found in the assessment of certain rather than uncertain values, and in the measurement of the tax more nearly than it is now according to earning capacity. The situation would further be remedied by raising more revenues from sources that are now yielding a smaller tax return than they might for distribution in such a way as to relieve the present excessive local tax burden. A degree of retrenchment in public expenditures along some lines is doubtless advisable, but no permanent measure of relief for farmers is to be expected without thorough readjustment in State and local fiscal methods.[18]

At about the same time there appeared the first of several reports on individual states, covering the relation of farm real estate taxes to cash rent.[19]

One of the first over-all appraisals of the farm-tax situation ap-

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[16] L. S. Tenny, *Report* of the Acting Chief of the Bureau of Agricultural Economics, fiscal year ended June 30, 1926 (Washington, 1926), p. 31.

[17] H. C. Taylor, *Report* of the Chief of the Bureau of Agricultural Economics, fiscal year ended June 30, 1923 (Washington, 1923), p. 49.

[18] C. O. Brannen and J. T. Sanders, *Taxation of Rented Farms* (Processed), U.S.D.A. (Washington, 1925), p. 17.

[19] C. O. Brannen and R. W. Newton, *Taxation of Farm Real Estate in Indiana* (Preliminary report), U.S.D.A. (Washington, March 1925).

peared in the 1924 U. S. Department of Agriculture *Yearbook*. That report brought together information that had been gathered in cooperation with various state agricultural experiment stations. It stated:

> Taxes on farm property in the United States increased approximately 140 per cent from 1914 to 1923. The value of farm products in 1923 was only 58 per cent more than in 1914, while net business receipts of farmers, according to the best available estimates, were little if any greater in 1923 than in 1914. Farm taxes have increased, but the fund from which the tax is paid has not increased in proportion. Although this change in the relation of taxes to income is not confined to agriculture, certain conditions of State and local revenue systems tend to intensify the problem of taxation for farmers more than for any other class of producers.[20]

In discussing the general property tax as it affected the farmer, the authors' views were summarized:

> In the earlier period of our history, when practically all income was derived from land, the capital value of property was perhaps as good a measure as any of personal tax-paying ability, and the method certainly was easily applied. The demand for public expenditures at that time was comparatively moderate, and such inequalities as may have existed were probably insignificant. With the development of modern society this situation has changed. Instead of wealth consisting almost entirely of real estate or real estate equipment, as formerly, some now employ one class of property, while others employ an entirely different class in making a living or deriving income. Still others, notably the professional classes, require practically no property at all in the conduct of their business.
>
> The outstanding feature of our present tax system is the failure of the general property tax to accommodate itself to the change that has taken place. The general property tax fails to reach the newer and diversified forms of wealth as efficiently as it reaches real estate, and, besides, it levies no tax at all on personal earnings. The result is that the property tax, once general in character, has come perilously close to degenerating into a tax solely on real or tangible property. The tax has, in fact, lost its character as an approximate measure of personal ability to pay.
>
> The defects of the general property tax have long since been recognized. The justification for the tax appears to have shifted ground. No one any longer justifies the tax as a means of reaching tax-paying ability, but rather as a convenient method of taxing property as such. Meanwhile certain other sources of income remain untaxed, or, as in a few States, are reached in another way. Yet the general property tax still stands out as the leading source of tax revenue. . . .
>
> Even within the restricted limits wherein the tax now operates it falls with unequal weight upon incomes from the property it reaches. As long as practically all capital was used in agriculture the rate of returns realized by investors tended to be about the same on similar values. However, the wide range of returns now possible from equal investments in many of the newer classes of property destroys the reliability of a capital value tax as an equitable measure of taxes to be levied on property or on the owners of property.
>
> Almost everywhere property used in agriculture stands out as the most ill-favored of all classes when the tax is considered in relation to earnings. The tax on farm real estate, together with taxes on farm machinery, livestock, and other property, all of which are easily reached by the property tax, has

[20] N. A. Olsen, C. O. Brannen, G. F. Cadisch, and R. W. Newton, "Farm Credit, Farm Insurance, and Farm Taxation," U.S.D.A. *Yearbook* 1924 (Washington, 1925), p. 257.

caused the agricultural industry to bear an undiminished tax burden despite the rise of more productive industries.[21]

A subsequent study by Whitney Coombs, "Taxation of Farm Property," published in 1930, presented quantitative estimates of the various types of taxes paid by farmers and discussed their incidence and effects.

In summarizing, Coombs stated:

That farm taxes are high is no new discovery. The particular value of the quantitative analyses here given lies in the presentation in a single bulletin of scattered data, some of which are published here for the first time. These data tend to confirm the belief, which students of the subject have expressed in recent years, that farm real estate is bearing an extremely heavy weight of taxation. They also tend to corroborate each other in that they point toward the same general conclusions.

Farm taxes in 1927 were estimated to be over $900,000,000. Most of this amount was paid through the general property tax and through taxes levied on automobiles. Trends in farm taxation for the country as a whole and for certain individual States indicate that from 1914 through 1917 the rise in taxes was gradual, that from 1918 to 1923 there was a drastic increase, and that since 1923 there has been a small increase each year.

An attempt was made on the basis of intensive studies in 14 States to compare taxes with the earnings of agricultural property. This resulted in an estimate that taxes, at present, are taking about 30 per cent of the net rent of farm real estate. An examination of the results of studies of the return on farm property and on the owners' managerial abilities indicated that on farms operated by their owners taxes had, in the past six years, amounted to from 18.5 to 31 per cent of such returns.

Average figures do little to indicate actual conditions. At many points throughout the study an effort has been made to indicate the importance of variations from the average. Inequalities in assessments do much to cause the variations between farms in the percentage of return taken by taxes. The conclusions and certain of the data of a few studies of the relationship of assessed valuation of farm lands to their true value illustrate some of the types of inequality and show their effect on the distribution of the tax levy. Improvement in the assessment process was shown to be one of the prime requisites of any program of tax reform.

In the relationship comparison between taxes and the estimated value of farm property, the data examined showed wide variations from section to section of the country and undoubtedly would have shown great difference between one and another farm if the study could have been carried down to the individual properties concerned. In 1924 taxes were reported to have taken on the average 1.2 per cent of the value of the farm real estate of the country. The slight increase in farm taxation since that year and the decline in the value of farm real estate had, by 1927, probably increased this to 1.33 per cent of the value of farm property.

It has been made clear that farm property is heavily taxed and that, along with other real estate and certain other classes of tangible property, it is bearing more than its reasonable share of the cost of local government. The methods by which the local units are financed places on tangible property almost the whole weight of local expenditures.[22]

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[21] Olsen, *et al.*, ". . . Farm Taxation," pp. 262–63.

[22] W. Coombs, "Taxation of Farm Property," U.S.D.A., *Technical Bulletin* 172 (Washington, 1930), pp. 66–67.

A significant step forward in the efforts to measure the tax load on farm real estate resulted from the inclusion in the 1930 Census, at the request of the Bureau of Agricultural Economics, of questions relating to this subject.

The Fifteenth Decennial Census Reports for 1930 were the first to carry information relative to taxes paid on farm property. Although several tax questions were asked on the 1925 farm schedule the information obtained was not included in the census reports for that year. Only those farm operators who owned all or part of their farms were required to answer the two tax inquiries on the general farm schedule in 1930. It was not considered advisable to ask this information of hired managers or tenants, for in most cases they would not know the amount of taxes paid on the real estate of the farms operated by them.[23]

These data, in addition to supplying the Bureau of Agricultural Economics "bench-mark" data for computing its state indices of farm real estate taxes per acre, furnished the data for a comprehensive Census monograph, "Taxes on Farm Property in the United States." The scope of this report is indicated here:

Some of the data assembled in this bulletin are given for the United States as a whole and for each of the individual States, with some of the State totals subdivided into district totals, but the bulk of the remaining data are given for 100 selected counties grouped in somewhat definite areas in 11 States. In some States the different groups of counties were selected to represent different type-of-farming areas, in others to represent good farming areas as distinct from poorer areas, while the whole selection, with several exceptions, was made with the idea of keeping at a minimum urban influence on both farm values and taxes. The principal purpose of the data for the 100 selected counties was to confirm or disprove the theory that the ratio of real-estate taxes paid to the value of farm real estate declined progressively as the value of the farms increased. In economic parlance such phenomenon is termed "regression." Two other tests were made to ascertain if regression is present when the same farms were arrayed according to size as measured by total acreage in the individual farms or when they were arrayed according to average value of land and buildings per acre. Whether or not the results for the 100 selected counties are fairly representative of all counties in general depends upon the uniformity of the results. It is the hope of those responsible for this study that the facts presented will be of basic importance to governing bodies, tax officials, students, and other citizens who are engaged in scrutinizing the tax system and the incidence of each form of tax. However, it is not within the scope of this study to outline methods for improving that part of the fiscal activities of government which is concerned with securing revenue from taxes.[24]

State Taxation Research

KANSAS

It is probable that the first comprehensive program of farm-tax research initiated by any state agricultural college was that of Kansas. There Eric Englund pioneered in developing new factual knowledge

[23] "Taxes on Farm Property in the United States," U. S. Bureau of the Census, 15th Census, 1930, *Census of Agriculture* (Washington, 1933), p. 11.
[24] "Farm Property," p. 1.

of the farmer's tax situation. His first published findings were presented in a series of seven articles appearing weekly in the *Topeka Daily Capital,* April 1 to May 13, 1923. In the introductory article, Englund wrote:

> Taxation is the most important public question in Kansas today. . . . The agricultural depression is the immediate reason for the acuteness of the tax problem at the present time. Agriculture, the main industry of the state, has taken an enormous deflation. The purchasing power of the farmer's dollar has been far below the pre-war level, and farmers have found it increasingly difficult to pay their taxes. This is illustrated by the enormous increase in delinquent taxes on farm real estate.[25]

In this series of articles, Englund outlined proposals for tax revision that would reduce the burden falling on real estate. These proposals were further elaborated in subsequent research studies.

In 1924, Englund published his first bulletin dealing with farm-tax problems, "Assessment and Equalization of Farm and City Real Estate in Kansas." This study was a forerunner of a number of studies by other states in which the relation between assessed value and sale value of farm properties was investigated. Englund's study was based on data obtained through the state tax commission of bona fide sales of real estate in Kansas covering a period of 10 years, 1913 to 1922, inclusive. One of the significant conclusions of his study was:

> There is a strong and general tendency throughout the state to assess small real estate properties at a higher per cent of true value than the larger properties. . . . Not a single county of the 15 from which data on farm real estate were obtained for this study failed to show this tendency. This was also true in the 16 counties showing the assessed valuation of city real estate. Consequently, owners of small pieces of real estate are required to pay a higher tax, in proportion to true value, than owners of large properties.[26]

In an effort to bring about greater equality in the valuation of real estate for assessment purposes, Englund stated:

> One fact stands out more clearly than any other, in this long and detailed analysis of inequalities in the assessment of real estate; namely, that the chief difficulty is inherent in the work of valuation under the present plan. The greatest inequalities, and the most pronounced tendency toward retrogression in equalization, are found at the local assessor's point of contact with property. . . .
>
> . . . There is every reason to believe that one person in each county, specially qualified for the work of assessing property, would be able to fix more uniform values on individual parcels of real estate than is attained under the present system. Likewise, he should be able to bring about a more equitable adjustment between large and small properties, so that the small landowner would be required to bear an important part of the large landowner's taxes. The county officer would be able to fix more uniform values on property not only because of superior skill and greater opportunity to

[25] E. Englund, "A Program of Taxation for Kansas," *Topeka Daily Capital* (April 1, 1923), p. 2.

[26] E. Englund, "Assessment and Equalization of Farm and City Real Estate in Kansas," Kansas Agr. Exp. Sta. *Bulletin* 232 (Manhattan, 1924), p. 12.

devote his time to this work, but also because he would be somewhat farther removed from the personal influence of the owners. This would perhaps enable him to do his work more objectively than is possible for the local assessor under the present system.

It is not likely that the county unit plan of assessing property would be more expensive than the present system. In fact it should cost less, because the number of assessing officers would be reduced to a fraction of the present number.[27]

In the same year, Englund published his second bulletin, "Tax Revision in Kansas," in which he surveyed the whole revenue system of the state, and concluded:

The need for tax revision in Kansas and the suggested tax program, as presented in this bulletin, are based on three premises: (1) That the growing cost of state and local government falls on tangible property, especially on real estate, in a state where general property taxation is almost the only means of raising revenue; (2) that continued reliance on general property taxation, notwithstanding fundamental changes in the economic life of the state, results in an unequitable distribution of the cost of government among the people of the state; and (3) that there is in the state an abundance of taxable capacity which escapes taxation under the present systems, but which would bear its portion of the cost of government under a revenue system suited to the economic life of the state.

Property taxation itself is in need of improvement in Kansas, from the standpoint of valuation and classification of property. Furthermore, the author has taken the position that the property tax should be supplemented by other forms of taxation, and has suggested certain revenue measures to achieve this purpose. Are these measures related to each other and to the property tax in such a way as to form a logically arranged whole, or are they merely separate and unrelated tax measures? The author believes that they are sufficiently related to constitute, with the property tax, a revenue system.[28]

In 1925, a third study, "The Trend of Real Estate Taxation in Kansas From 1910 to 1923," was published by Englund. This was the first study of its kind to provide a definite measure of the annual variation in farm real estate levies. As indicated by the author:

The purpose of this study is to show the trend of taxes relative to selling value of farm and city real estate in Kansas and to measure the causes of the increase in real-estate taxes. Selling value is used as a basis for showing trends, since "true value in money" is the legal basis of assessment and taxation in Kansas. . . .

Taxes per acre of all land in the state in 1923 were 134 per cent higher than the 1910 to 1914 average. The selling value per acre increased only 28 per cent in the same period. . . .

The increase in the ratio of taxes to selling value of real estate in the period under study was due chiefly to greater expenditures for improvements and services rendered by state and local government.

Since expenditures for administration or general revenue became a decreasing levy on the selling value of real estate, it is incorrect to attribute the increase in the ratio of tax to selling value to "increased cost of government."

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[27] Englund, "Assessment and Equalization," pp. 67–68.

[28] E. Englund, "Tax Revision in Kansas," Kansas Agr. Exp. Sta. *Bulletin* 234 (Manhattan, 1924), p. 93.

It should be attributed to increased expenditures for specific improvements and services which the public demanded of state and local government.[29]

The problem of federal aid in agriculture and its relation to the distribution of tax levies was analyzed by Englund in 1926. The author states:

> . . . This report is the result of a general study of the present policy of federal aid for research in agriculture, and for agricultural extension, vocational education, and rural highway construction. The purpose is to indicate the relation of this policy (1) to the general public welfare and (2) to the distribution of the taxes necessary on account of these activities. The principal arguments against federal aid are stated and analyzed because such a procedure is thought to afford a more concrete basis for a general study of federal aid as a part of our long-time agricultural policy than could be afforded by a more abstract approach to the subject. It is not the purpose *per se* to refute the arguments against federal aid, although the discussion is in several instances presented in the form of a refutation.
>
> . . . For the purpose of this report, federal aid is divided into two classes:
>
> *First*: Federal aid which is not conditioned upon a like contribution by the states. This includes federal support for agricultural experiment stations under the Hatch, Adams, and Purnell acts, and support for the land-grant colleges under the Second Morrill Act (1890) and the Nelson Amendment (1908).
>
> *Second*: Federal aid which is conditioned upon the contribution of a like amount by each participating state. This is commonly called the "fifty-fifty system." The principal parts of this system are: Coöperative agricultural extension work (Smith-Lever Act), vocational education (Smith-Hughes Act), and highway construction (Federal Aid for Roads Act). Federal aid under these three laws amounted to 98 per cent of the total federal expenditures under the fifty-fifty system, in the year ending June 30, 1924.[30]

In summarizing his conclusions, Englund stated:

> 1. Federal aid is a part of the growing influence of the national government, and can be justified only on the ground that it promotes the general welfare. . . .
> 4. There are four principal criticisms of federal aid: (1) That it gives the national government supervision and control over local affairs, in violation of the spirit of the Constitution; (2) that it tends to destroy state and local incentive and initiative; (3) that it draws state and local funds from uses which may have greater local importance; and (4) that it distributes taxes unfairly.
> 5. The Supreme Court of the United States has declared that the legal basis of federal aid is not judiciable, which means that the will of Congress is final in appropriating funds for these purposes and in levying taxes to meet such appropriations.

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[29] E. Englund, "The Trend of Real Estate Taxation in Kansas From 1910 to 1923," Kansas Agr. Exp. Sta. *Bulletin* 235 (Manhattan, 1925), pp. 3, 4. About the same time O. M. Johnson presented an index number of farm taxes in Ohio, in 1880–1924. The series was based upon the taxes paid by a single rural township in each county.

[30] E. Englund, "Federal Aid as a Part of a Long-Time Agricultural Policy—With Special Reference to the Distribution of Tax Levies," Kansas Agr. Exp. Sta. *Bulletin* 237 (Manhattan, 1926), pp. 6, 7, 6.

6. The acts of Congress providing federal aid for research and education in agriculture and for road construction give broad scope for state and local initiative. The actual workings of federal aid stimulate initiative and afford opportunity in many ways for coöperative self-help in local communities. . . .
10. Federal aid partly offsets the disadvantages of small taxing units. In the future, public functions that are general in character may receive relatively more support from larger taxing units than in the past.
11. Several causes have contributed to the growth of federal authority. As economic life becomes more complex and as the several parts of the Nation become more interdependent, the larger unit of government will grow more rapidly in authority and influence than the smaller unit.[31]

TEXAS

Among the first state publications dealing with the over-all tax problems of farmers was the bulletin, "Trend of Taxes on Agricultural Land in Texas and Distribution of the Farmer's Tax-Dollar," by F. A. Buechel. In outlining the purpose of the study, the author states:

This study is designed to set forth the most pertinent facts, together with an analysis of these facts, relative to the taxation of agricultural lands in Texas. It is believed by the writer that only as the facts are collected and interpreted in a perfectly objective way, shall we be able to formulate policies for the improvement of the tax system of the state. Since taxation plays such a vital part in the every-day life of the people of the state, and since "the power to tax is the power to destroy," it follows that thoughtful people have preconceived ideas upon the subject of taxation, often of a very intense character. In order to obviate any possibility of successful criticism of the present work on the ground of its having ulterior motives or is designed for propaganda purposes, no general conclusions will be drawn or remedies proposed. The present writer will adhere strictly to the presentation of figures, which will be set forth in the form of tables and graphs; the text will be confined to an analysis of the figures presented. . . .

State and local revenues are obtained largely from an ad valorem tax on real property, especially land. These taxes have risen greatly since 1914. In Texas the increase in taxes on agricultural land since this date has been over 120 per cent. No such corresponding increase in the receipts from farm land has occurred, especially since the summer of 1920, when the great decline in the price of farm products began. This increase in taxation, then, measures approximately the actual increased burden which farmers, over the greater part of the state must now carry in comparison with pre-war times.

This Bulletin shows by means of statistical tables and graphical representations how the farmer's tax bill has increased, and also what part of his tax dollar is levied by the state, the county, and the local districts. It also shows where the tax goes which is levied by each of these jurisdictions, and what percentage of the farmer's tax dollar is levied for each purpose within the jurisdictions.[32]

NEW YORK

G. F. Warren pointed out the close relationship between farm taxes and the level of wages:

[31] Englund, "Federal Aid," p. 3.
[32] F. A. Buechel, "Trend of Taxes on Agricultural Land in Texas and Distribution of the Farmer's Tax-Dollar," Agricultural and Mechanical College of Texas, *Bulletin* 334 (College Station, 1925), pp. 4, 5–6.

Taxes paid by farmers are primarily for schools, and for wage payments for various local services. Since the local taxes are the primary taxes that farmers pay, the assumption often is made that these taxes are under the control of farmers, and that farmers are to blame if taxes are high. The conclusion is drawn that taxes can be lowered by farmers if they so desire. The conclusions are erroneous. Farm taxes are high because wages are high. Farmers cannot control wages and therefore can do very little to lower taxes. Pay of school teachers in the one-teacher schools in New York State in 1923 was 254, when the five years before the war is considered as 100. Union wages in 1924 were 233 when the five years 1910–1914 is considered as 100. Taxes were 232. . . . The total payments for teachers and for wages cannot be materially reduced. Primarily the tax problem is how to collect the necessary funds.

When our taxation systems were designed the weaver, the tanner, the shoemaker and the teamster lived in the community. Profits which they made from the community were invested in the community, so that they could be reached through a general property tax. Today, the profits made by the various business agencies are not located in the community from which the profits were derived. These profits can be reached by taxes on corporation profits, by personal income taxes and by inheritance taxes.

The taxes on farm land could be reduced by reducing or discontinuing the state tax on real estate and by greater state support for roads and schools.

Formerly, roads were primarily for local use and were paid for by the towns and counties. Today, even the dirt roads are often used for interurban highways much more than they are used by farmers. In many cases, farmers are paying out of proportion to the use which they make of the roads.

Our present theory of school support is to furnish the child with free education, expecting that when grown he will pay for educating the next generation. About one-half of the children educated in the country move to the city and so escape direct payment to the rural school district which educated them.[33]

The results of a study as to whether general-property taxes on farm property in the United States could be collected more efficiently was presented by Kendrick in 1928. The author formulated the problem as:

. . . Can the general-property tax in the United States be collected more efficiently? Can the $845,000,000, or more, of farm general-property taxes gathered annually in the United States be collected more efficiently than it is now collected? By collection, only regular collection is meant. The matter of tax sales is a subject in itself.[34]

The method followed in developing this study was outlined:

The method used in formulating an answer to this question was one of statistical comparison, for it was assumed that costs of collection would vary with the administrative unit of collection, the collecting official, and the method of paying him. In order to get relevant data, certain published materials, notably those by the Tax Commissioner of Connecticut and the Tax Commission of Pennsylvania, were consulted. A few fragments were

[33] G. F. Warren, "Why Taxes Are High," *Farm Economics,* No. 32, New York State College of Agriculture (March 10, 1926), pp. 422–23.

[34] M. S. Kendrick, "The Collection of General-Property Taxes on Farm Property in the United States, With Emphasis on New York," Cornell University Agr. Exp. Sta. *Bulletin* 469 (Ithaca, 1928), p. 4.

available from other States. *The Digest of State Laws Relating to Taxation and Revenue,* 1922 issued by the United States Department of Commerce, was useful to determine administrative units and officials for tax collection in the various States. For the bulk of the source material it was necessary to resort to letters and questionnaires. Letters were written to most of the state boards in charge of tax administration. Then some five hundred questionnaires were mailed to tax-collecting officials.[35]

The author's conclusions were summarized:

In many States, general-property taxes on farm property could be collected more cheaply. The evidence indicates that a general adoption of the system of county-treasurer collection of taxes, with the treasurer on a salary basis, would lower costs (some of them greatly) in most of the 28 States which do not have this system of collection. This is particularly true in the States where fees are paid for tax collection, and in those where the unit of collection is smaller than a county. In New York, with large amounts in taxes collected under a system where small administrative units of collection are combined with a fee basis of reward, the savings which could be realized by county-treasurer collection of taxes, with the treasurer on a salary basis, are large. Large savings could probably be realized in Pennsylvania also.

The gains from such a system of collection by county treasurers are due to a combination of circumstances.

A county unit of collection makes possible economical efficient methods of collection. Addressographs, adding machines, filing cases, and all the modern paraphernalia of business, can be used with great economy if only the unit of collection be large enough.

With the treasurer as a collector, there is a saving due to a better use of the treasurer's time. It is probable that this saving is usually as great as his salary. In addition, there are savings in office space, equipment, and labor, for with two functions these have less idle time.

A salary reward for the treasurer-collector introduces needed elasticity in the system, in the sense that, with it, payment can be adjusted more closely to service rendered. For any public service taxpayers should pay only enough to get the quantity and the quality of service desired. This is a matter of so many dollars, and can and should be decided only in terms of dollars. All that a fee system does is to avoid the real question by assuming arbitrarily that a certain percentage or schedule of percentages should be paid for the service. At its best, a fee system of collection operates under a schedule of percentages which in practice never go low enough for large collections and whose computation is so involved as to conceal the cost of collection from the taxpayers. At its worst, a fee system of collection means the permanent closing of a certain, powerful, and ready source of economy in tax collection, that due to increased size of tax collections.[36]

In a study of the cost of local government, Kendrick analyzed the cost of maintenance of large and small county boards in the United States. In his report which appeared in 1929, the author stated:

The county board is the administrative and legislative committee of the county. Its services are rendered in sessions, where the members sit as a group on matters of general county business; and in special committee work, where singly or in groups they perform various administrative duties.

Due to the forty-five different laboratories of political experimentation in

[35] Kendrick, "Collection," p. 4.
[36] Kendrick, "Collection," pp. 43–44.

which it operates, the county board is constituted and its members are paid differently in different States. Always its members are elected but sometimes they are chosen by districts and sometimes by the county at large. In some States they are county officials and represent the county; in others they are town, township, or ward officials, and thus represent local constituencies in the county meeting. Their numbers differ widely. Also, methods of paying them differ. In some States they are paid per diem, in other States they receive salaries.

These differences in the number, selection, representation, and payment of members of county boards raise as many questions. How many members should compose a county board? Should they be elected from districts or at large? Should they be county or town officials? Should they be paid salaries or per diem?

This study is directed to the first question. In deciding the number of members for a county board, an important consideration is the cost of maintaining boards of different sizes. Boards differ greatly in size, and presumably greatly in cost of maintenance. . . .[37]

Kendrick summarized his main points, in part:

Both large and small county boards of supervisors or commissioners were examined in respect to cost per session, cost of all sessions, number of sessions, and relation of number of sessions to county taxes levied, to population, and to density of population; and also in respect to the cost of special-committee work and the number of days devoted to it. This examination disclosed several significant differences.

The cost per session in States with large boards increases with increases in the number of supervisors. Variations in cost per session between counties in the same State are extreme. Some counties pay 18 times as much for a session as do others. The usual cost per session in these States is large. . . .

The number of sessions held annually by small boards is much greater than the number held by large boards. This is true for every population group studied.

A significant difference exists between large boards and small boards in respect to the relation between the number of sessions held and the levy of county taxes, the population of the county, and the density of population. In counties with large boards, increases in the levy of county taxes, the population, and the density of population are not accompanied by increases in the number of sessions of the county board. Thus, in these counties an increasing number and complexity of problems, of which the levy of county taxes, the population, and the density of population are but indicators, is not accompanied by a greater number of sessions for the consideration of county problems. But in counties with small boards, increases in the levy of county taxes, in the population, and in the density of population, are accompanied by increases in the number of sessions of the county board. Thus, in these counties increasing need for the consideration of county problems is answered by the setting aside of more periods for such consideration.

This difference between large and small county boards in the number of sessions is not equalized by variations in the number of days of special-committee work. Apparently both large and small county boards require approximately the same number of days of special-committee work.[38]

[37] M. S. Kendrick, "A Comparison of the Cost of Maintenance of Large and of Small County Boards in the United States – A Study in the Cost of Government," Cornell University Agr. Exp. Sta. *Bulletin* 484 (Ithaca, 1929), pp. 3–4.

[38] Kendrick, "A Comparison of the Cost," pp. 39–40.

The author stated his conclusions, in part, thus:

The evidence presented in the foregoing pages is that on the score of cost of maintenance small boards are to be preferred, and decidedly. . . .

. . . The small board functions with much more freedom than the large board. A group of 3 or 5 men may sit around a table, talk a matter over, and come to a conclusion concerning it. A large group — how large it is difficult to say, but certainly of more than 10 members — takes on the character of a legislative body, with speeches, bickering, obstructive tactics, formalities, and other time-consuming activities which mean that less work can actually be accomplished by it.[39]

An analysis of grants-in-aid from the state to local governments was presented by Kendrick in 1930. His conclusions were summarized:

An examination of the system whereby the proceeds of certain taxes collected by the State Government in New York are shared with units of local government, discloses that its present status is the result of a gradual development which began with one tax in 1896 and which eventually resulted in the passage of a total of ten laws of this character. In 1929 nine of the laws were in effect, the necessity for the excise tax having been removed on the adoption of the Eighteenth Amendment.

The principal factors accounting for this development were: the need of supplementary revenue by units of local government in addition to direct grants-in-aid by the State, and in addition to the absorption by the State of certain locally performed functions; the availability of this revenue; the reduction of the local tax base by the adoption of certain state taxes; and the existence of a desire for local autonomy on the part of the people of the State. The need of revenue by local units is indicated by the trend of the burden of the tax on property. The availability of this revenue is indicated by the expansion in the number of sources which the State Government tapped for its revenues, and by the declining percentage of these revenues supplied by levies on property. The reduction of the local tax base is illustrated by losses due to the passage of the mortgage-recording tax, the franchise tax on business corporations, and the personal-income tax. The desire for local autonomy is indicated by much of the literature of the period preceding the overthrow of the township school law, and by the relative stability of county and town organizations of government.

Revenues collected by the State and shared with units of local government are financially significant, whether expressed in dollars or in percentages. Also, over a period of years, their trend has been toward a position of greater significance in the financial system of both state and local units of government. . . .

An analysis of the problems which arise in a division with units of local government, of tax revenues collected by the State, indicates that taxes which are selected for a division of revenues should come from sources which can be localized, and that local units should receive no more than they contribute to the tax revenues divided with them, and no less than an amount determined by their need for revenue relative to the need of the State Government.

This analysis suggests that the contribution of the larger units of local government to a given tax revenue can be determined with a closer approach to accuracy than can that of the smaller units, but it indicates that the choice of units for distribution depends somewhat on whether it is good

[39] Kendrick, "A Comparison of the Cost," pp. 40, 41.

public policy to encourage or to discourage small units. The principle of local autonomy in the expenditure of funds collected by the State and shared with local units is recognized, but it is pointed out that the fullest recognition of this principle permits the State one useful type of control — that over the financial accounts of local units.[40]

WISCONSIN

Whereas up to this time most workers in the tax field had emphasized the need for tax reduction, Hibbard and Allin, in 1927, raised the issue as to whether or not taxes were burdensome by saying:

When Is a Tax a Burden? — A mere comparison of the percentages of incomes absorbed by taxes may, under certain circumstances, tell very little concerning the relative burden of such taxes. In the first place, a tax paid by a given group of people may be a rather high proportion of the net income and yet be relatively light as a burden because it is shifted. Suppose, for example people engaged in the retail business have average incomes of $3,000 but pay no tax. Here, some would say, these people carry no tax burden. Now suppose this same group should be required to pay an average tax of $500. If they are able to shift the tax, their incomes will then be $3,500 and they will be paying 14 per cent of their net incomes for taxes. Are they any more heavily burdened by taxes than before? No. But the percentage of income absorbed by taxes is much greater.

Thus the complication of the shifting and incidence of taxes must be considered. Economists and tax authorities are in general agreement, however, that income taxes and taxes on land are practically incapable of being shifted. If this be true, a larger proportion of the city taxes are shifted to the farmer than vice versa, since the taxes which can be shifted are mainly taxes on personal property and improvements.

Another fact that must be taken into account is the possibility of the purchaser of a piece of property paying less for it because of a high tax. For example, people bid for land with some rate of taxation in mind. They capitalize only the real and anticipated net income after the taxes are paid. Thus, a landlord may pay 40 per cent of the income from a piece of property and still have a fair return left for the price he paid for the land. The state is virtually the owner of that undivided interest in the property from which the tax is derived.

Taxed and tax free securities afford an excellent illustration of this principle. One person holds tax free securities and gets a return of 5 per cent from them. Another holds taxed securities and gets a return of 8 per cent but pays a tax amounting to 3 per cent. Is one more heavily burdened by taxes than the other? They both, directly or indirectly, pay the average tax rate. Competition levels the returns.

Then what is the point in comparing the percentages of incomes absorbed by taxes paid by one group with those of another?

This theory of "Buying one's self free from taxes" has caused a lot of mischief in the thinking of people on tax questions. It is true and will work — *if given enough time*. But here lies the discrepancy. It takes too much time. The farmers of today own practically the same farms they owned in pre-war days. They have held the property while the taxes went up beyond expectations. And preferring low wages to low property values they have held

[40] M. S. Kendrick, "The Collection of Taxes by the State of New York, and the Division of These Revenues With Units of Local Government," Cornell University Agr. Exp. Sta. *Bulletin* 511 (Ithaca, 1930), pp. 51–52, 52–53.

values so high that there have been practically no sales. Eventually the values will be real rather than hoped for, but in the meantime the wages have been abnormally low, partly because of high taxes.[41]

The possibilities of tax reduction through reorganization of local government became of increasing interest as a field of research during the thirties. One of the early studies in this field dealt with the situation in Washburn County, Wisconsin. In the introduction to their report, Wehrwein and Allin state:

AVERAGE FARM real estate taxes per acre in Wisconsin increased from 47 cents in 1913 to $1.07 in 1930, an increase of 126 per cent. There has been a substantial reduction since 1930, but the burden of the tax has increased because of the greater decline of farm prices during the past two years. The farm tax burden is heavy, and there is a strong demand for its reduction.

Among other proposals for reducing farm taxes, it has been widely suggested that functions be re-allocated among the various units of rural local government and the state, and that the number of units be reduced. It is contended that such changes would afford an opportunity for a substantial lowering of farm taxes, and that the tax reduction thus made possible could be realized not only without any impairment of present services, but with distinct possibilities for improvement.

Is there opportunity in Wisconsin for farm tax reduction by this method? The state has 9,145 tax-levying bodies. In addition to the state government, the number includes: 71 counties, 145 cities, 359 villages, 1,280 towns, 7,361 school districts.

This multiplicity of governmental units is regarded by many as the cause of much waste in public expenditures. It is pointed out particularly that since the areas of most of the rural counties and townships were established during the "horse-and-buggy age," they are now too small.[42]

The authors' conclusions were summarized:

Possible Farm Tax Reduction — Not all of the possible savings in the cost of government would go to the rural areas. Incorporated urban areas would share in the benefits. Assuming, however, no change in state aids and that any savings would be used to reduce taxes, rural tax reduction would amount to about $38,000, or slightly over 20 per cent of the 1931 tax levy on rural property for all purposes, and about 17 per cent of the 1930 levy. Farmers would get a similar reduction. Thus, for every $100 of farm taxes now paid, a reduction of $20 would be possible. . . .

There are, however, at least three important qualifications to the conclusion that farm taxes might be reduced 20 per cent by the changes here considered. In the first place, though it may be possible to reduce rural taxes by the adoption of a rural county-unit school system, equalization of school tax rates would surely result in an increase in the rates of many districts, and such school tax reduction as might be possible would be confined to only a part of the farmers. Moreover, for a considerable number of farmers who would otherwise receive some income from the township for road work, the amount of the income curtailed by the changes proposed would undoubtedly be greater than the reduction of their taxes. Population in many of the towns

[41] B. H. Hibbard and B. W. Allin, "Tax Burdens Compared, Farm-City-Village," Wisconsin Agr. Exp. Sta. *Bulletin* 393 (Madison, 1927), pp. 24–25.

[42] G. S. Wehrwein and B. W. Allin, "Possible Farm Tax Reduction Through Changes in Local Government" (Preliminary mimeographed report), Wisconsin Agr. Exp. Sta., *Special Bulletin* (Madison, 1933), p. 1.

in this area is sparse, and the proportion required to fill public office and to do road work is relatively large. Non-resident taxpayers of the county and resident taxpayers who are not on the public payroll (which these changes would reduce) stand to gain most through governmental reorganization.

A third qualification is that if the suggested changes were made, undoubtedly a part of what is now spent for town roads would have to be spent for unemployment or poor relief; but it is not possible to estimate the amount. Thus the estimated reduction is subject to this modification; and the only farmers interested in the proposed changes are those whose possible tax reduction would exceed their loss of income from the public payroll. The general conclusion is that while important savings are possible, the amount of resulting farm tax reduction is somewhat questionable, and would be very unevenly distributed among farm taxpayers.[43]

MICHIGAN

In analyzing farm-assessment taxes in Michigan, Newton stressed the idea that "cash value" was not an equitable measure of tax liability by saying:

This definition of "cash value" would produce grave inequalities in tax burdens even if the machinery of assessment were ideal and the assessing officers were more than human in their perfection. The term "usual selling price" itself is ambiguous in meaning since some classes of property are almost never sold, while in other cases the terms upon which they sell vary so greatly that there is almost no basis of comparison. Many classes of merchandise are normally sold on terms calling for full payment within from 30 to 90 days. Other classes of personal property are sold on the installment plan, and the usual selling price is spread over a twelve months' period. In contrast with this, real estate normally sells on terms which contemplate the spreading of payments over a period ranging from 5 to 30 years. Elaborate credit machinery has been created for this purpose and the increased ease with which properties may be purchased, has caused a rise in real estate values over what they would have been had all sales been actual cash transactions. The usual selling price of some classes of taxable property is a true cash value, but the usual selling price of real estate is by no means to be considered as the cash value of the property in question. Assessments which seek to reach the usual selling price of all classes of property are therefore excessively high on real estate as compared with many other kinds of taxable wealth.[44]

NORTH CAROLINA

In a study made for the North Carolina Tax Commission in 1929, an attempt was made to measure the burden of taxation on various types of farms. The report concluded:

The Commission has experienced difficulty in obtaining a basis for measuring the burden of taxation. It seems evident, however, from the analysis of the data that the tax burden on agriculture is indeed heavy. Taxes are especially burdensome in those agricultural areas which are characterized by a self-sufficing or non-commercial type of farming. They are burdensome also in certain areas of the state in which the farmers have been forced, because of boll weevil infestation, to change radically their type of farming. In these sections, taxes often exceed the farmer's ability to pay. If this condition

[43] Wehrwein and Allin, "Possible Farm Tax Reduction," pp. 6–7.
[44] R. W. Newton and W. O. Hedrick, "Farm Real Estate Assessment Practices in Michigan," Michigan Agr. Exp. Sta. *Special Bulletin* 172 (East Lansing, 1928), p. 47.

continues there is no doubt that farmers will be forced to deplete their capital resources, thereby reducing still further their productive power; or to be compelled to pay taxes out of wages, thereby reducing their standard of living.

It should be pointed out, however, that where incomes have been adequate, taxes have not been exceptionally burdensome. This is especially true in those areas in which the boll weevil has been comparatively inactive and where tobacco of good quality has been produced.

This report has emphasized the fact that in many cases taxes are burdensome because of the defective method now employed in assessing and appraising farm land. There is ample evidence of discrimination in assessment, with a result that in some areas the majority of the farmers pay less taxes than they should, while in other areas the majority of the farmers pay more taxes than they should. This condition can and should be remedied. The law requires that all property be assessed at its true or market value, but the law is seldom, if ever, complied with. The Commission does not argue that it is necessary to assess land at its true or market value in order to avoid discrimination. The important thing is uniformity of assessment. Uniformity, however, cannot be attained unless some method is developed for ascertaining the "true" or market value of property. This, of course, is a difficult undertaking, as relatively few farms are sold or transferred in any given community. Furthermore, when farms are sold or transferred, the consideration is stated in such vague terms as to be almost useless. It has been effectively demonstrated, however, that the values of transferred properties can be obtained and used effectively in assessing farm property. . . .

The Commission's conclusions with respect to the agricultural report are: (1) that taxes on agriculture are indeed heavy generally and especially in those areas in which, for various reasons, incomes have been relatively low; (2) that our present methods of assessing and appraising farm property for taxation purposes are defective and should be remedied; and (3) that the tax burden is often heavy because of poor farm management and organization, and inadequate methods of marketing agricultural products. The Commission is of the opinion that there is need for improvement in each of these phases of the problem in order to relieve the tax burden on a large number of farmers in this State.[45]

Homestead Tax Exemption

The economic importance attached to the high level of farm real estate taxes led to many proposals for reducing their burden on farmers. One of these received specific legislative action in Wisconsin when the state adopted a homestead tax exemption law in 1923. This act, however, remained in effect only until 1925, when it was repealed. Commenting on this measure, Johnson and Allin stated:

It can hardly be maintained that the Wisconsin experiment with homestead exemptions conclusively proved either one side or the other of the question of the effect of taxation upon land utilization; the experiment was too brief. If any economic reason can be assigned for the abandonment of the exemption policy, it was probably a realization on the part of the legislators that homestead exemption meant a redistribution, rather than a reduction

[45] G. W. Forster, H. W. Hawthorne, G. S. Klemmedson, and H. H. Wooten, "Farm Income and Taxation in North Carolina." Reprinted from the 1928 Report of the North Carolina Tax Commission, June, 1929, pp. 55–56, 57.

of tax burdens, and that the decreased burdens on small property holders were more than offset by the increased burdens on other classes of property.[46]

With the adverse economic conditions of the depression following 1929, the idea of homestead tax exemption as a tax relief measure was again revived. In 1932 Texas and West Virginia both passed such measures. By 1939, 11 additional states had adopted similar legislation. In summarizing the significance of this movement, G. J. Isaac stated:

> Tax preference for homesteads cannot be considered or evaluated solely in the light of its efficacy in reducing the burden of property taxes on home owners. From both fiscal and functional points of view extensive adoption of homestead tax preference measures may encourage some fundamental changes in the interrelationships of State and local governments.
>
> Available statistics indicate increases in the number of homesteads qualifying for preferential treatment, but the evidence is not yet conclusive because of uncertainty as to the extent to which these increases reflect increasing familiarity with technical requirements. Theoretically, homestead exemption, at the outset, is likely to encourage home ownership, but the tax saving may not be a net gain if home owners help to pay taxes levied to replace the revenue loss or if home buyers have to pay more for their homes because of the capitalization of the tax reduction by the seller.
>
> Homes that are entirely exempt will not be subject to alienation for taxes, but they may be more susceptible to foreclosure if the debt load is increased by the addition of the capitalized tax reduction. This might be particularly true if uneconomic home-ownership results among persons of uncertain and inadequate income.
>
> Reduction in total taxes will not follow unless services are curtailed or adjusted to a more economical basis. If the same services are to be rendered, substitute revenues will have to be found. In this case, the nature of the substitute will determine the final saving, if any, that will accrue to home owners. When the exempt property constitutes a substantial part of the tax base, the fiscal problem caused by exemption may lead to extensive realignment of functions among various strata of government. Homestead exemption must be evaluated in the light of all these potential effects as well as its immediate effect in reducing property tax payments of home owners.
>
> Theoretically the practical effect of the introduction of homestead exemption into any taxing jurisdiction will depend upon, (1) the definition of an eligible homestead, (2) the proportions of various classes of property in the jurisdiction, and (3) the means adopted to offset the revenue loss.[47]

Tax Delinquency

While the problem of tax delinquency on cut-over forest lands had occupied the attention of economists for as far back as 1890, it was not until the period immediately following the 1920 depression that the problem of tax delinquency on farm lands became a matter of concern to agricultural economists. In the various tax studies undertaken by several agricultural experiment stations in the twenties, frequent reference was made to the amount of delinquent taxes on farm land.

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[46] O. M. Johnson and B. W. Allin, "The Exemption of Homesteads From Taxation," *Journal of Land & Public Utility Economics*, 1:384 (July 1925).

[47] G. J. Isaac, "Tax Preference for Homesteads," U.S.D.A., *Agricultural Finance Review*, 2:22–23 (May 1939).

The rapid increase in tax delinquencies in northern Wisconsin was analyzed in a study issued in 1928. The authors stated:

> The present tax delinquency situation in the northern seventeen counties has developed almost entirely since 1920. In 1921 certificates representing a million acres were sold, of which an amount representing three-quarters of a million acres (nearly 73 per cent of the entire sale) have since been redeemed by the owners. In 1927 the area represented by certificates sold was over two and a half million acres (an increase of 139 per cent over 1921) of which less than one-third of a million acres (less than 12 per cent of the entire sale) has since been redeemed by the owners.
>
> In general it can be said that the phenomenal increase in tax delinquency during the past seven years is due not so much to an increase in the tax per acre on any class of land as to the decline in the value of land.[48]

As to means for ameliorating the situation, the report concludes:

> The first definite step forward in the solution of the land situation as depicted above, that is, the difficulty of keeping the land in use, and collecting taxes from it, was taken by the state legislature in the passage of the Forest Crop Law of 1927. It provides for the listing by private parties, or perhaps by counties, of land on which timber is growing, or to be grown. The owner is to pay a tax of ten cents per acre, and the state a like amount, to the local governments within the boundaries of which the land is situated, and at the time the timber is cut a tax of ten per cent of the value of the timber is to be paid by the owners to the state. Already the equivalent of several townships of land are listed under this law. . . .
>
> The school tax equalization law will relieve materially the sparsely settled school districts of the northern counties from the burden of the school tax. Since school taxes constitute about 30 per cent of all taxes, any material reduction in this tax should serve to reduce tax delinquency. The exact figures are not yet available to show just what this new law will do, but authoritative estimates indicate that Milwaukee County will pay nearly a half million dollars more than its former necessary quota for schools for the use of less wealthy districts, and Dane County an additional $75,000. Of the counties benefiting from this law it is estimated that Forest County for example, will receive more than $17,000 from the wealthier parts of the state. . . .
>
> An act passed by the legislature in 1927 permits counties to develop forests on land acquired by tax title or otherwise, and provides for the administration of such property. The county may, under this act, go into the timber growing business, and incidentally provide for the protection of water sheds, the development of game refuges and places for recreation. The Langlade County Board has already voted to submit the question of county forests to a referendum. Thus the state provisions for county forests is meeting with response.[49]

With the deepening of the depression following 1929, tax delinquency which had cropped up intermittently during the twenties, became an acute national problem. In 1934, the Bureau of Agricultural Economics, in co-operation with the state agricultural experiment stations conducted a Federal Civil Works Administration project to

[48] B. H. Hibbard, J. Swenehart, W. A. Hartman, and B. W. Allin, "Tax Delinquency in Northern Wisconsin," Wisconsin Agr. Exp. Sta. *Bulletin* 399 (Madison, 1928), pp. 11, 18–19.
[49] Hibbard, "Delinquency," pp. 25, 26, 27.

ascertain the extent of rural tax delinquency for the levy years of 1928 through 1932.

. . . Detailed summaries from that survey covered about 650 agricultural counties in the 48 States. Data were taken from the official records for the levy years of 1928 through 1932. The period covered essentially the complete development of farm tax delinquency into an extraordinary problem. Before 1928 delinquency was principally a matter of special cases; after 1932 the difficulty began to mend both from its fiscal and from its private cost aspects.

In 1928 something less than 12 percent of the area of the counties surveyed was tax delinquent. This figure may sound large, but by 1932 it had increased to 28 percent. Principal significance attaches to the increase of 140 percent. Both figures do, however, include short-term delinquency. Such delinquency is important enough from many angles, but does not greatly elucidate the chronic problem which was developing.

Amount of delinquency increased about with the increases in delinquent area. The two trends differed in many counties or States, but the difference largely averaged out. Figures from the sample suggest by rough calculation that nearly 500 million individual acres of land were delinquent within the 5-year period, for the sum of perhaps 550 millions of dollars in taxes. Relative size of the acreage and dollar figures must not be used to indicate rate of taxation because some acres were delinquent for several years' taxes, some were delinquent for a fraction of 1-year's levy. The dollar delinquency was of a magnitude somewhat comparable with the 1932 property tax levy against farmers, but must of course be spread over all rural taxes, rather than farm taxes only.

An interesting characteristic of the series for various States is their similarity. Rates of increase naturally varied, but no State had such moderate taxes or such efficient a collection system as to prevent a very great and dangerous increase in rural real estate tax delinquency.[50]

Public Finance in Relation to Agriculture — Scope and Method

The Social Science Research Council, as a part of its program of surveying the "Scope and Method" of research in the various sub-fields of agricultural economics and rural sociology, issued in 1930 its report on "Research in Public Finance in Relation to Agriculture — Scope and Method." This report was prepared under the direction of a special advisory committee consisting of John D. Black, Chairman, Harvard University; Eric Englund, Executive Secretary, Bureau of Agricultural Economics; M. S. Kendrick, Cornell University; and R. W. Newton, Michigan State Farm Bureau.

The report outlined its objectives:

The specific ends in view in the preparation of this report on the scope and method of research in public finance in relation to agriculture were to mark off this field of agricultural economics research, indicate its interrelations with other fields of research, outline its content, describe the research projects already undertaken in this field, point out additional projects that might be undertaken, review and evaluate the methodology employed in projects completed or under way, and suggest methods and procedures that may be

[50] C. D. Jackson, "Trend and Present Status of Rural Tax Delinquency," U.S.D.A., *Agricultural Finance Review*, 1:28 (November 1938).

used to advantage in different types of projects both old and new. It is hoped that the discussion presented will be of assistance to those engaged in research in this field or responsible for its conduct, and that as a result of it the various agencies engaged in agricultural research will undertake a larger and more carefully considered body of research in public finance as it affects agriculture, and that the methods employed and procedures followed will be such as to lead to more worth-while conclusions and recommendations.[51]

The report in discussing "The Field of Research" states:

The projects discussed in this report are those in which agricultural economists may be of service. Some are included which are clearly of such general concern and application that any student of public finance can be expected to interest himself in them, and which therefore agricultural economists need give attention to only in case of neglect; as for example, the project relating to centralization of authority in assessment. At the other extreme are such projects as those relating to assessment of farm property, land taxes, and rural school support. In general, the projects included in the list may be described as having to do with *the part of public collections which comes from farm people, and with the part of public activities and expenditures which is in their behalf.* The major types of collections are of course the same for farm people as for other people; but their incidence and burden are different, and also the benefits. Some of the public activities are especially for agriculture and farm people. In the case of the general property tax, the type of property assessed becomes the basis of designating projects that need the help of agricultural economists. The type of governmental unit involved becomes another basis of separation – farm people are especially concerned with the activities of rural school districts and township units, and to an almost equal extent with those of most county units. However, with the increasing tendency toward state and federal taxes, illustrated by income and estate taxes and gasoline taxes, and an accompanying expanding sphere of state activities, agricultural economists need also to give attention to some phases of the public finance of state and federal governments.[52]

The major part of the report is devoted to a suggested list of possible research projects, including a discussion of methodology for each. The various types of projects are listed under the following groupings: (*a*) Projects involving the description of the system of public finance and taxation of a state; (*b*) projects explaining differences in rates of taxation and tax burdens; (*c*) projects attempting a comparison of the tax burdens of farmers with those of other classes or occupations; (*d*) projects involving the distribution of benefits from public activity between city and country, and relating this to their respective tax contributions; (*e*) projects involving the sphere of public activity in relation to agriculture; (*f*) projects relating to the shifting and incidence of taxation; (*g*) projects in public enterprise organization and management; (*h*) projects relating to tax administration; (*i*) projects relating to particular forms of taxes affecting agriculture; and (*j*) miscellaneous.

[51] Social Science Research Council, "Research in Public Finance in Relation to Agriculture – Scope and Method," *Bulletin* 1 (New York City, December 1930), p. 3.
[52] "Scope and Method," pp. 4–5.

Authors' Note

And thus the end of our story — 1932 — because that date marks the dividing line between two eras.

We have sought to preserve a record of some of the major roots from which agricultural economics has grown, to trace the direction of the growth, and to honor those whose insight, integrity and purposefulness determined both the direction and the soundness of the growth during the years between 1840 and 1932.

We did not want to give merely an outline — we tried to show something of the character that lay back of the activities of each man.

The plan of our project was based on the idea of quoting the actual words of agricultural economists. Therefore some who made few written records suffered from too little representation. That much good work has not been mentioned does not mean that it is not worthy of attention.

Agricultural economics will, of course, have a continuous growth — here is a story of beginnings.

Index

Made by
Adelaide R. Hasse

A

Acreage Estimates
- Becker, J. A. Individual farm rept. in estimating acreage (1922), 242
- Darg, J. J. Sources and relative value of crop data (1917), 234
- Hare, B. B. Special methods of ascertaining acreages (1917), 234
- Murray, N. C. Preparation of estimates (1917), 233
- Woodworth, J. E. Relation of acreage of major staple crop to acreage of other crops (1917), 234

Acreage Estimates, classified
- Census of U. S. First in 10th Census, 1880, 259
- Cotton, 217, 218–220, 241
- Count systems. Mississippi cotton belt; mechanical device attached to automobile (Mc Candless), 241
  - South Carolina, 1919; cotton fields (Hare), 241
  - Telephone poles, 241
- County discrepancies. Keep commission charges; *in its* Rept. 1906, 221
- Inquiry systems. Annual inquiry system discontinued in 1924 in favor of rural carrier survey, 242
  - Becker, J. A. Relative merits of types, study 1920; *in his* individual farm rept. . . . 1922, 241
  - Regionalization of inquiries, 245
  - Rural carrier survey succeeded annual crop inquiry in 1924, 242
- "Intention to plant" repts. Development, 1923–1938, first issue of "prospective plantings" rept., 242–243
  - Effect on cotton exchanges and prices, 242–243
  - Judgment type survey made in April, 1917, 242
- Par system. Becker, J. A. Explanation; *in his* Cotton crop forecasts (1926), 244
- "Ratio to land" approach; credited to E. A. Logan, 244
- "Ratio-relative"; first used about 1916 by N. C. Murray and S. A. Jones, 244
- Wheat, 211
- Yield inquiries; annual initiated in 1929, 243
  - Development; relationships, condition repts., 243–244
  - Sarle, C. F. Adequacy and reliability of crop-yield estimates (1932), 243

Adams, D. W. (1831–1897)
- Worthy Master Nat'l. Grange; annual address, 1876, 9–10

Adams, E. F. (1839–1929)
- Interest in I.I.A., 687
- Modern farmer in his business relations (1899), 687

Adams, F.
- Interview quoted *re* E. F. Adams and T. F. Hunt, 687, 689

Adams, R. L. (1883–) and T. R. Kelly
- Study of farm labor in Calif. (1918), 889

Adams, T. S. (1873–1933)
- Member first Agric. Outlook Conference. 1923, 449

Agee, A. (1858–) and F. App
- Farm labor (1917), 883

Agresti, O. R.
- David Lubin; study in practical idealism (1922), 13, 16, 18, 255–257

Agricultural Bloc, 506

Agricultural Economics, citations to general works and items
- Bailey, L. H. The harvest (1927), 150, 382, 408
- Bean, L. H. Post-war interrelations between agric. and business (1930), 881
- Bidwell, P. W. Rural economy in New England at beginning of 19th century (1916), 304
- Brentano, L. Agrarpolitik (1897), 776
- Brooks, R. P. Agrarian revolution in Georgia, 1865–1912 (1914), 299–302

Agricultural Economics, (*cont.*)
Butterfield, K. L. Analysis of rural problem, 1910, 84–85
Caird, J. High farming . . . best substitute for protection (1848), 333
Carver, T. N. Principles of rural economics (1911), 119
Crowell, J. F. Agric. question has sectional character, 1896, 41
Folwell, W. W. Farm problems, 1896, 44
Great Britain. Royal commission on Agric. Prelim. rept. (1881), 389
Holmes, G. K. The nation's farm surplus, 1903, 524–525
Hunt, T. F. Lectures on hist. of agric. and rural economics (1899), 55, 63, 67–70, 356, 391
International Conference of Agric. Economists. Proceedings, 1930, 865, 881
Jouzier, E. Economie rurale (1903), 91–92
Morrow, G. E. Our farming, its changing condition and outlook (1886), 58–60
National Agric. Conference, 1922. Address . . . S. Anderson, chrm., 581
National Bureau of Economic Research. Share of agric. in national income, 1909–1925, 507–509
Peek, G. N. and H. S. Johnson. Equality for agric. ed. 2 (1922), 584–585
Roberts, I. P. Fertility of the land (1897), 101
Schmidt, L. B. Economic hist. of Amer. Agric. as field for study (1916), 280–282
and E. D. Ross. Readings in econ, hist. of Amer. agric. (1925), 282
Seligman, E. R. A. Agric. problem, 1896, 42
Society for Promotion of Agric. Science. Proceedings, 1912, 368
Taylor, H. C. Agric. economics (1919), 166
Early hist. of agric. economics (1940), 858
Introduction to study of agric. economics (1905), 81, 101–104, 118, 132, 143–146, 156–157, 351, 403, 785, 787, 996
Outlines of agric. economics (1925), 118, 159, 785–786, 804
Place of economics in agric. research and education (1911), 121, 165, 278–280, 303, 864
Syllabus of lectures on agric. economics (1903), 117, 126–129, 143
and J. Perlman. Share of agric. in national income (1927), 506–509
Thaer, A. Einleitung zur Kentniss der englischen Landwirtschaft. 3 v. (1798–1804), 116, 332
True, A. C. History of agric. experimentation and research in U. S., 1607–1925 (1927), 606, 615
Walker, C. S. Farm problem; outlook, 1896, 43
Walker, F. A. Amer. agric. (1882), 112, 113, 284
Rept. on productions of agric. (1883), 112–113, 261
Wallace, H. C. Stmt. concerning agric. situation at time, 1923, 596–599
Warren, G. F. Origin and development of farm economics in U. S. (1932), 74, 347
Wilson, J. *In his* Rept. for 1912 (1913) uses term, 195

Agricultural Economics, classified
Census repts. *See* Census of Agric., 258–276
Farm management. *See* Farm Management Research
Farm ownership and tenancy. *See that title*
Production factors. Variations in, 154–164
Route system of cost accounting, started in Minn.; carried on by A. Boss, 79
Sheep industry an example of historical study of economic forces, 279
Statistics controversy: Keep Commission U. S. Dept. of Agric. and Census Bureau, 1906, 220–225
Teaching of. *See* Educational Facilities
Terminology
Controversy of 1910–1911; farm management and rural economy confusion, 80–98
Early terms, 53–54
Taylor, H. C. Letter suggesting program for clarifying terminology of agric. economics, 1910, 89

Agricultural History Society
Organization in 1919; participation of R. True, 317
Publication of "Agricultural History" inaugurated in 1927, 317

Agricultural Ladder, 820–822, 824, 850

Agricultural Outlook Approach, 447–479

Agricultural Outlook Conference, 1923, 449–451

Agricultural Surveys, 326–387
See also Farm Management Research

Agriculture, citations to general works
Bidwell, P. W. Agric. revolution in New England (1921), 304
and J. I. Falconer. History of agric. in the northern U. S. 1620–1860 (1925), 304–310
Bordley, J. B. Essays and notes on husbandry (1799), 388
Brewer, W. H. History of Amer. Agric. (1883), 284

Columbia Univ. Studies in the history of Amer. agric. Eds. H. J. Carman and R. G. Tugwell. vol. 1 (1934), 338, 339
Cyclopedia of Amer. Agric. L. H. Bailey, ed. vol. 1 (1909), 90, 663
Falconer, J. I. Agric. production in U. S. 1840 to 1860 (1914), 305
Flint, C. L. Hundred years' progress repts., 1872, 282–284
Gray, L. C. and E. K. Thompson. History of agric. in the Southern States to 1860. 2 vols. (1933), 310–313
Poore, B. P. History of agric. of the U. S. Rept., 1866, 282
Schafer, J. Microscopic method applied to agric. (1921), 294
Thaer, A. Einleitung zur Kentniss der englischen Landwirtschaft. 3 vols. (1798–1804), 116, 332
Walker, F. A. American agric. (1882), 112, 284

Agriculture, classified
Agricultural Experiment Stations.
Federal level. *See* Government Studies, Federal Level
State Level. *See* Government Studies, U. S. State Level
Census reports. *See* Census of Agric., 258–276
Dept. of Agriculture, States. *See* Government Studies, State Level
U. S., attains cabinet status Feb. 9, 1889, 8
See Government Studies, U. S. Federal Level
Schools. *See* Educational Facilities

Alabama
Cost of growing cotton; 1920 records obtained, 423

Allen, E. W. (1864–1929)
joint author. See Hill, J. L., 601

Allen, F. W. (1887–)
joint author. See Stokdyk, E. A., *et al.*, 754

Alliance
See National Farmers' Alliance

Allin, B. W.
joint author. See Hibbard, B. H., 1013–1014; Johnson, O. M., 1017; and Wehrwein, G. S., 1014

Almonds
Wellman, H. R. and E. W. Braun. Almonds [Calif.] (1928), 473

American Assoc. for Agric. Legislation
Proceedings, 1919, 814–817

American Cotton Manufacturers' Assoc.
Cotton acreage rept. of U. S. Div. of Statistics, Dept. of Agric., June, 1905, challenged, 217

American Country Life Conference
Presidential address, F. O. Lowden, 1930, 478–479

American Economic Assoc.
Establishment in 1885; co-founders, 857
Meetings 1892. The Farmer's Movement discussed, 32–35
1896. Is there a Distinct Agric. Question? Discussion, 39–45
1907, 1908. Summary, 82–83

American Farm Bureau Federation
President, J. R. Howard. *See* Howard, J. R., 587

American Farm Economic Assoc.
Consolidation, 1919, of Amer. Farm Management Assoc. with Assoc. of Agric. Economists, under title Amer. Farm Economic Assoc., 98
Name adopted Jan. 8, 1919, 84
Taylor, H. C. Development of Amer. Farm Economic Assoc. (1922), 98

American Farm Management Assoc.
Active participants in promoting organization, 1910, 84
Committee on Investigation. Rept., A. Boss. 1911, 96–97
Committee on Scope and Cleavage. Report. 1910; findings challenged, 85–90
Consolidation with Assoc. of Agric. Economists under title Amer. Farm Economic Assoc., 1919, 98
Proceedings or Repts. of ann. meetings
1910. Statement Pres. Butterfield, Analysis of rural problem, 84–85
1911. Rept. Committee on Investigations, 96–97
1914. Burrit, Goddard and Smith papers, 377–380
1917. Taylor (High prices), 137 Spillman (Land classification), 822, 861

American Institute of Cooperation
Origin, 705–706
Sessions 1–2, 1925–1926, 706–708

American Institute of Meat Packers
Meat retailing studies by B.A.E., importance suggested by, 713

American Society of Equity
Action on policies of groups in field of agric. cooperation and marketing, 1910–1918; reviewed, 557–561
Founder, J. A. Everitt, 487
Local unions and membership in Nov., 1911, 557
Wisconsin activities
Beginning in 1903; Wisc. Equity News established May, 1908, 557
Retardation of activities of Univ. of Wisc. ended in 1918, 662
Wisc. State Union organized in 1906, 488, 557

Anderson, L. (1866–)
Farm management work, Univ. of Calif., 1910, 81

Anderson, B. M. (1886–)
Member first Agric. Outlook Conference, 1923, 449

Anderson, S. (1882–)
Address, as chrm. National Agric. Conference, 1922; agric. prices, 581
Consulted, 611
Andrews, F. B.
Costs of hauling crops from farms to shipping points (1907), 525
Animal Nutrition
Corn. *See* Corn Fodder, 65
App, F. (1886–)
Farm Labor, 883
Apple Marketing Research
Jefferson, L. P. Consumer demand for apples (1929), 729–730
Cost of marketing apple crop of 1923, 726–727
AREA STUDIES
California
Rauchenstein, E. Economic aspects of apple industry (1927), 473
Stokdyk, E. A., *et al.* Marketing Calif. apples (1930), 754
Idaho
Wells, C. F. Statistics on prices and destinations of Idaho apples (1928), 467
Illinois
Lloyd, J. W. and H. M. Newell. Marketing Calhoun Co. apples (1928), 742–743
Indiana
Cleaver, H. M., M. R. Cooper and J. W. Park. Indianapolis apple market (1928), 753
Gaylord, F. C. and H. M. Cleaver. Indianapolis apple market: 1929–1930 apple crop (1931), 753
Massachusetts
Jefferson, L. P. Market outlook for Mass. apples (1927), 728–729
Yount, H. W. and L. P. Jefferson. Economic study of Mass. apple industry (1926), 727–728
Michigan
Gaston, H. P. Consumer demand for apples in Mich. (1931), 745
New York State
Jefferson, L. P. The McIntosh apple on the N. Y. market (1928), 729
Ohio
Hauck, C. W. Apple industry of Ohio (1928), 755
Apple Orchards
New York State
La Mont, T. E. Costs and returns in producing apples in . . . Niagara Co., N. Y., 1926–1928 (1933), 359
Warren, G. F. Apple orchard survey of Wayne Co. (1905), 359
Apricot Industry
Wellman, H. R. Apricots [Calif. acreage and production prospects] (1927), 471
Arator. Colonel Taylor, 283
Areas of Cultivation
Coutts, W. A. U. S. and foreign countries compared. *In his* Agric. depression in U. S. (1897), 47
Peters, E. T. Rise in margin of cultivation in U. S. cause of agric. depression (1896), 42
Arkansas
Agric. credit. *See* Farm Finance and Agric. Credit–Area Studies–Ark., 951–952, 957–958
Agric. Exp. Sta. Bulletins
See Government Studies, U. S. State State Level
Banks and Banking. Garlock, F. L. and B. M. Gile. Bank failures in Ark., 1935, 971–972
Cotton. Gile, B. M. and A. N. Moore. Farm Credit in a plantation and an upland cotton district in Ark., 1928, 957–958
Records obtained in 1920 on cost of growing cotton, 423
Armentrout, W. W. (1894–)
Adjusting agric. production and distribution to meet home market demands
Beckley area [W. Va.], 1930, 461
Clarksburg area [W. Va.], 1926, 461
Wheeling area [W. Va.], 1930, 461
, H. T. Crosby and H. I. Richards. Adjusting agric. production and distribution in south central W. Va. to meet home market demands, 1924, 460
Armsby, H. P. (1853–1921)
Director Penn. Agric. Experiment Station, 65
Works cited
Corn fodder experiments, 1891, 65
Food yield of forage corn (1892), 65
Arnold, C. R. (1891–)
joint author. See Taber, R. F., 402
Arthur, C. M.
joint author. See Price, H. B., 733
Ashby, H. S. P.
Member National Farmers' Alliance Committee on the Monetary System promoting the sub-treasury plan, 1889, 6
Ashby, R. C. (1882–)
Livestock truckage rates in Ill. (1930), 741
Practices and problems of cooperative livestock shipping associations in Ill. (1929), 741
Asia Fruit Industry
See Fruit Marketing Research, 753–754
Assessors
Efficiency of in collecting crop and livestock statistics for Wisc., Ohio, Nebr., Iowa, Kan. and Mo., 237
Associated Farming
Peffer, W. A. Benefits of farmers' institutes, etc. *In his* Agric. depression rept. 1894, 24

Association for Advancement of Science
Petition to Congress to change public land system, 1890, 858
Association for Improving Condition of Poor
Inquiry into causes of agric. depression in N. Y. State, 1894, 908
Association of Agric. Economists
Consolidation in 1919 with Amer. Farm Management Assoc. under title Amer. Farm Economic Assoc., 98
Association of Amer. Agric. Colleges and Exp. Stas.
Committee on Instruction in Agric. Membership, functions, 89–90
Graduate School of Agric. conducted 1902–1916, 83–84
Subcommittee on Rural Economics and Farm Management. Rept., 1911, 90–95
Atkeson, T. C. (1852–1935)
Course in rural economics at W. Va. 1897–1910, 80
Outlines of Grange History (1928), 12
Atkinson, C. F.
joint author. See Loring, F. W., 288
Atlas of American Agriculture, 316–317

B

Babcock Test
Invention by chief chemist, S. M. Babcock (1843–1931), College of Agric., Univ. of Wisc., 550
Baggett, R. T. and W. H. Rowe
Suggested plan for cotton-crop insurance (1939), 987–988
Bailey, L. H. (1858–)
Economic outlook derived from Fairchild, 71–72, 79
Field work under Asa Gray, 347
1890's. One of the foundation builders for development of agric. economics, 54
1896. Suggested basis of discussion at 1896 meeting of Amer. Econ. Assoc., 39
1903. Brought T. F. Hunt to Cornell, 356
Assisted Hunt set stage for Warren's survey work, 63
Dean College of Agric., Cornell, 349
1908. Organized Country Life Commission, 353–355
1909. Editor Cyclopedia of Amer. Agric. v. 4, 90, 663
1911. Position on terminology of agric. economics, 90, 93
re Tompkins Co. survey, 364–365
Works cited
Early survey work by, 347–350, 382–383
Education by means of agric. (1909), 349
Report upon condition of fruit-growing in western N. Y. (1890), 348
Report upon extension work in horticulture [second] (1896), 78, 79, 348
State and the farmer (1908), 350
Survey idea in country-life work (1913), 350, 359
The harvest (1927), 150, 382, 408
Baily, F. (1774–1844)
Journal of a tour in unsettled parts of North America, 1796. London (1856), 286
Baker, O. E. (1883–1949)
Historical-geographical atlas project, 1912–1924, 316–317
joint author. See Gray, L. C., O. E. Baker, *et al.*, 852, 862–863
Bakewell, R. (1725–1795)
British agric. pioneer; mentioned, 116
Bakken, H. H. (1896–)
Marketing Wisc. foreign cheese by federation (1926), 662
Ball, E. D. (1870–1943)
Asst. Secy. Agric. 1920–1921, 602
Ballinger, R. A. and J. L. Maxton
Marketing Va. tobacco (1932), 762–763
Banks and Banking
Abolition of banks of issue proposed (Peffer), 1894, 25
Bank loans to farmers on personal and collateral security (Valgren and Engelbert). (1922), 940
Cattle loans, 935
Country bank failures and farm credit, 968–974
Farm mortgage loans by banks, insurance cos. and other agencies (Valgren and Engelbert). (1921), 939–940
Federal Intermediate Credit System. *See that title*
Federal Land Bank at Springfield, Mass.; operations, 1917–1919 (Hill). (1932), 964–966
Spread of "free banking," 902–903
AREA STUDIES
Arkansas
Garlock, F. L. and B. M. Gile. Bank failures in Ark. (1935), 971–972
Illinois
Stewart, C. L. Analysis of investigation of rural banking conditions in Ill., Ill. Bankers' Assoc. (1914), 929
Iowa
Garlock, F. L. Long term loans of Iowa banks (1930), 970–971
Wisconsin
Garlock, F. L. Country banking in Wisc. during the depression (1941), 972–974.
Barber, W. H.
joint author with Jesness, O. B., *et al.*, 646

Barnes, J. H. (1873–)
Remarks at conference in Office of Secy. of Agric., Feb., 1922, 586
Report to conference, 1922, 587–589
Barrett, C. S. (1866–1935)
Member of Country Life Commission, 353
Bartlett, R. W.
Milk marketing in Penn. (1926), 747–749
Organization and development of co-operative fire insurance cos. in N. Y. (1924), 982–983
Price plan for selling milk by collective bargaining organizations (1930), 749
with W. E. Gregg. Milk marketing in Penn. (1928), 749
Bean, L. H. (1896–)
Assigned to price-trend study, 454
Works cited
Applications of graphic method of multiple curvilinear correlation (1929), 457
Farmer's response to price (1929), 458
Post-war interrelations between agric. and business (1930), 881
Simplified method of curvilinear correlation (1929), 457
Bean Industry
California
Beans. (Wellman and Braun) [foreign competition, local price fluctuation, acreage outlook] (1927), 472
Michigan
Marketing Mich. beans (Hedrick). (1931), 746
Beard, W. A.
Member of Country Life Commission, 353
Beardsley, H. S.
joint author. See Yoder, F. R., 953–954
Becker, J. A. (1891–)
Acreage inquiry systems, relative merits of types, 241–242
Cotton crop forecasts of U. S. (1926), 245
Individual farm report in estimating acreage (1922), 242
Milk and egg estimates, 252–253
"Normal" defined, 211
Par system, 244–245
re H. A. Robinson, 208
with C. L. Harlan. Development in crop and livestock reporting since 1920 (1939), 242–246, 251, 252
Beckley Area, W. Va.
Local market adjustment (Armentrout). (1930), 461
Beef Cattle
Fattening cost. *See* Cost Accounting
Bell, E. J., Jr.
Current problems of Mont. farmers' elevators (1930), 614
Larger markets for Mont. wheat (1927), 613–614
Marketing high protein wheat (1928), 614–615
joint author with Whitcomb, W. O., 612
Bemis, E. W. (1860–1930)
Farmers Movement; comment, 1892, 34
Benner, C. L.
Federal Intermediate Credit System (1926), 950
Bennett, C. M.
joint author with Cooper, M. O., 420–421
Bennett, M. K. (1897–)
Farm cost studies in the U. S. (1928), 388
Bennett, R. L.
All-cotton farming credit risk, 937–938
Benton, A. H. (1886–)
Farm tenancy and leases (1918), 813–814
Bercaw, L. O. and E. M. Colvin
Bibliography on marketing of agric. products, 1924–1931 (1932), 711
Berger, A. C. (1888–)
P. R. Taylor, B. H. Critchfield and R. S. Kifer. Agric. production and marketing in Lebanon Co., Penn. (1925), 460
Bibliography
See Bercaw; *See* Marquis
Bidwell, P. W. (1888–)
Agricultural revolution in New England (1921), 304
Rural economy in New England at beginning of 19th century (1916), 304
and J. I. Falconer. History of agric. in the northern U. S., 1620–1860 (1925), 304–310
Billings, G. A. (1870–)
joint author with Spillman, W. J., 151–152, 319–320, 368–369, 374
Bingham, W. V. (1880–1952)
Studied methods of crop estimating, 242
Black, J. D. (1883–)
Division of farm income bewteen landlord and tenant, 1919, 814–817
Introduction to production economics (1926), 153, 159
Seminar in U. S. Div. of Farm Management and Costs conducted by Black in 1922, 442
and L. C. Gray. Land settlement and colonization in the Great Lakes States (1925), 867
and E. S. Guthrie. Economic aspects of creamery organization (1924), 730–732
, B. A. Holt and G. M. Peterson. Economic aspects of local potato warehouse organization (1925), 733

and H. B. Price. Cooperative central marketing organization (1924), 654–657
ed. Research in farm labor (1933), 894
joint author. See Hartman, W. A., 869; Taylor, H. C., 886; Tolley, H. R., 138–140, 442–446
Black, W. H. (1888–)
joint author. See Wilcox, R. H., *et al.*, 425
Blair Co., Penn.
See Pennsylvania
Blinn, P. K.
Development of Rockyford cantaloupe industry (1906), 638
Blith, W.
The English Improver (1649), 782
Bohannan, C. D. and D. P. Campbell
Preliminary study of marketing Burley tobacco in central Ky. (1916), 565
Boies, H. (1827–1923)
Statement challenged by H. C. Taylor, 155
Bollman, L. (1823–?)
Annual repts., 1863, 180–183
Statistician U. S. Dept. of Agric., 1863–1866; succeeded by J. R. Dodge, 183
Bonanza Farming
Peffer, W. A. Means of reducing price of corn and cost of production. *In his* Agric. depression rept., 1894, 21–22, 24
Scott, W. A. Remarks at Amer. Economic Assn. meeting, 1896, 39–41
Bonham, E. R.
joint author. See Robertson, L., 463
Booms
Sumner, W. G. Effect of booms and collapses during three centuries of Amer. history. *In his* Cause and cure of hard times (1896), 37
Booth, J. F. (1895–)
Farmers cooperative business organizations in N. Y. (1928), 670–671
Bordley, J. B. (1727–1804)
Essays and notes on husbandry and rural affairs (1799), 388
Boss, A. (1867–1947)
Farm management work at Minn.; interview, 1941, 77
Part of Boss in 45-year Minn. farm cost accounting undertaking, 394–395
Route system of farm cost accounting started in Minn. in 1902 by Hays and Boss, 81
Works cited
Forty years of farm cost accounting records (1945), 388, 396–399, 423
Letter Aug. 1, 1946, on cooperative writing of Minn. Agric. Exp. Sta. Bulletin No. 97, 397
Report as chrm. Committee on Investigations of Amer. Farm Management Assoc., 1911, 96–97
, F. W. Peck and T. P. Cooper. Labor requirements of livestock (1916), 415–419
joint author. See Hays, W. M., 76, 395, 397; Peck, F. W., 419–420; Wilcox, W. W., 161–164
Bosworth, M. R.
joint author. See Gross, J. M., 988–989
Boyle, J. E. (1873–1938)
Marketing of agric. products (1925), 733–734
Brand, C. J. (1873–1938)
Chief, Office of Markets, U. S. Dept. of Agric., 1913–1919, 510, 542, 546
Works cited
Cooperative cotton handling and marketing work in Bureau of Plant Industry (1913), 538–540, 618
Office of Markets, U. S. Dept. of Agric. (1913), 642
Vital concern of agric. in foreign trade (1919), 571
Brannen, C. O. (1884–)
and R. W. Newton. Taxation of farm real estate in Ind. (1925), 1001
and J. T. Sanders. Taxation of rented farms (1925), 1001
joint author. See Olsen, N. A., *et al.*, 946
Braun, E. W. (1902–)
joint author. See Wellman, H. R., 472–473
Brazil
Youngblood, B. Possibilities . . . as competitor of U.S. in cotton growing (1926), 760
Brentano, L. (1844–1921)
Agrarpolitik (1897), 776
Brewer, W. H. (1828–1910)
The cereals. Census of U. S. 10th Census, 1880, v. 3 (1883), 113–114, 124, 125, 262, 264–265, 389–391
History of Amer. Agric. Census of U. S. 10th Census. 1880, v. 3 (1883), 284–285
Report of cereal production of U. S. Census of U. S. 10th Census, 1880 (1883), 113–115, 124, 262, 264, 389
Brigham, J. H. (1838–1904)
Asst. Secy. of Agric. U. S., 1897–1904, 10, 12
Worthy Master National Grange; comment at Grange conventions of 1889 (on sub-treasury plan); 1892–1893 on "free silver" plan, 9–12
Brooks, R. P. (1881–)
Agrarian revolution in Georgia, 1865–1912 (1914), 299–302
Brown, C. A.
Costs and margins . . . in distribution of fluid milk in four Ill. market areas (1928), 738–739

Brown, R.
General View of Agric. of Yorkshire (1799), 783
Bryan, W. J. (1860–1925)
Mentioned, 41
Buck, S. J. (1884–)
Agric. crusade (1921), 977
Budgeting Method
See Farm Management Research
Buechel, F. A.
Trend of taxes on agric. land in Tex. (1925), 1008
Buffum, B. C. (1868–)
Cost and profit of growing wheat (1894–1895), 391
Bugby, O. M.
Assisted Goddard, 1905–1909, 400
Bullock, C. J. (1889–1941)
Instructor political economy at Cornell; course in Economics of agriculture 1895/6, 75
Bureau of Agricultural Economics
Chart showing evolution of, 605
Burke, E. (1809–1882)
Comr. Patents, U. S. 1845–1849; publication of Crop and Livestock Estimates, 1846–1848, 173–174
Wages of farm and industrial labor (1846), 873
Burlison, W. L. (1882–)
Mentioned, 60
Burritt, M. C. (1883–)
Farm management extension work in in N. Y. State, 1914, 377–378
Butter
Cost of production. *See* Cost Accounting Marketing Research
Hibbard, B. H. and A. Hobson. Marketing of Wisc. butter (1916), 555
Macklin, T. Marketing of Kan. butter (1917), 565–566
Butterfat
Thomsen, F. L. and W. H. E. Reid. Developing new markets for Mo. butterfat (1929), 702
Factors involved in buying Mo. cream (1930), 702, 703
Butterfield, K. L. (1868–1934)
Analysis of rural problem, 1910, 84–85
Carnegie Institution of Washington, 302
Member of Country Life Commission, 1908, 353
President Mass. Agric. College, 81

C

Cabbage Marketing
Misner, E. G. Marketing of cabbage (1925), 734
Cadisch, G. F.
joint author. See Olsen, N. A., *et al.*, 983
Caird, J. (1816–1892)
English agric. in 1850–1851 (1852), 333–334
High farming . . . the best substitute for protection (1848), 333
Letters to *The Times* on English agric. (1852), 333
Prairie farming in America with notes . . . on Canada and the U. S. (1859), 334
Cairnes, J. E.
Some leading principles of political economy newly expounded (1874), 522
Caldwell, W. H. (1866–)
joint author. See Hunt, T. F., 65
California
Agric. Exp. Sta. Publications. *See* Government Studies, U. S. State Level
Univ. of Calif. 62, 81
Agricultural Outlook Studies, 469–475
Almond growing, 473
Apple industry, 473, 754
Bean industry. (Wellman and Braun) (1927), 472–473
Cooperative marketing research. *See that title*
Crop and livestock products; studies made during 1926–1932 relating to Calif., originated by H. E. Erdman, 470
Dairy industry. *See* Dairy Farming
Farm labor. *See* Farm Labor
Fruit Growers' and Dealers' Assoc. Organization in 1869, 686
Fruit Growers' Exchange. Powell, G. H. Experience of Calif. Fruit Growers' Exchange (1913), 541
Fruit marketing. *See* Fruit Marketing Research, 469–475
Labor, Imperial Valley, 890
Marketing research studies, 1929–1931, 753–755
Poultry Industry. *See* Poultry Farming, 470, 697
Calkins, M. C.
Clarke Forestry Law [Clarke-McNary Act, June 7, 1924] (1925), 863
Call, L. E., R. M. Green and C. O. Swanson
How to grow and market high protein wheat (1925), 614, 725
Callander, W. F. (1880–)
Crop estimating journeys on foot, 233
Intention-to-plant repts. begun, 1924, 453
Rural mail carrier service for gathering livestock statistics, 246–249
Sent to Europe in 1921, 239
Callender, G. S. (1865–1915)
Yale Review (1906), 292
Campbell, D. P.
joint author. See Bohannan, C. D., 565
Campbell, W. G. (1877–)
re cotton conference in London, 1925, 630

Cance, A. E. (1874–)
Teacher agric. economics Mass. Agric. College, 1908, 81
, W. L. Machmer and F. W. Read. Connecticut Valley onion supply and distribution (1916), 563
Canfield, J. H. (1874–1909)
Rural community dissatisfied with public administration; Populist movement, 1894, 36–37
Cannon, F. (1859–)
Dingley Tariff Bill amendment; intr., May, 1897, 18
Cantaloupe Industry
Blinn, P. K. Development of Rockyford cantaloupe industry (1906), 638
Lloyd, J. W. Marketing the muskmelon (1908), 547
Output distribution, 634–635
Rauchenstein, E. Economic aspects of cantaloupe industry (1927), 470
Sanborn, N. D. Marketing and harvesting cantaloupes and honeydew melons, 1924–1925 (1926), 638
Capacity and Efficiency, 157, 439
Capper, A. (1863–1951)
The Agricultural Bloc (1922). Prepared by J. C. Marquis for Senator Capper, 506
Card, D. G.
Marketing of Ky. bluegrass and orchard grass seeds (1923), 719–720
Marketing Ky. eggs (1928), 721–722
Marketing Ky. poultry (1928), 721–722
joint author. See Jesness, O. B., 678–679; Phillips, C. D., 680–681
Card, F. W. (1863–1941)
Course in farm management at R. I., 1898, 81
Farm management (1907), 110
Carey, L. J.
Franklin's economic views (1928), 984
Carman, H. J. (1884–)
and R. G. Tugwell (1891–), eds. Studies in history of Amer. agric. v. 1 (1934), 338, 339
Carnegie Institution of Washington, D.C., 302
Carroll, M. V.
joint author. See Dunlap, R. B., 459, 461
Carson, W. J.
Financing production and distribution of cotton (1923), 943–944
joint author. See Curtis, G. W., 391
Cartoon
Agricultural ladder, 820
Carver, T. N. (1865–), 129–134, 351–353
Agricultural tours, Corn Belt, New England, Europe, 351–353
Director of Rural Organization Service, 1913, 545, 924
Intensity of culture, 130–134
Law of diminishing returns or variable proportions, 129–134
1913. Director of Rural Organization Service, U. S. Dept. of Agric., 924
Works cited
Autobiography; unpublished ms. (n.d.), 353
Conservation and economic theory, *joint author,* 857
Distribution of wealth (1904), 129–133
How to use farm credit (1914), 927
Intensity of culture. *In his* Distribution of wealth (1904), 129–131
Law of diminishing returns. *In his* Distribution of wealth (1904), 129–131
Life in the Corn Belt (1903), 351
Principles of rural economics (1911), 97, 119, 150–151
Rev. by H. C. Taylor (1912), 133–134
Case, H. C. M. (1890–)
Demonstration method; stimulating farmers' interest in financial accounts, 380–381
Farm management demonstrator, State of Ill., 1915–1917, 380, 402–403
Goddard survey records, 380
Letter to H. C. Taylor, March 13, 1947, 60
joint author. See Mosher, M. L., 403; Mumford, H. W., 743
Catherwood, M. P.
Statistical study of milk production for N. Y. market, 1931, 736
Cattle Loans
Cole, C. S. Cattle loans and their value, 1918, 935
Ebersole, J. F. Cattle loan banks (1914), 935
Federal Reserve Bd. Cattle loan companies. *In its* Bulletin (1922), 935
Cattle Marketing
See Livestock Marketing Research
Census of U. S.
Census as a survey of agric., 1840–1920, 347
Census Bureau (Dept. of Commerce, 1913–). Decennial census. *See below*
Press release jointly with B.A.E.; estimated total farm mortgage debt, 1920 (1923), 941
Quinquennial census. *See below*
Census Bureau (Dept. of Commerce and Labor, 1903–1913). Cotton Production. Bulletin 40, 1905 (1906), 220
Crop acreage statistics controversy; Keep Commission repts. (1906), 220–225
Decennial census. *See below*
Census Bureau (Dept. of Interior, 1850–1903). Decennial census. *See below*

Census of U. S. (*cont.*)
Census Bureau (*cont.*)
National Bd. of Trade, Committee of Inquiry on National Statistics; investigation of work of Census Bureau, 1902, 214
Census Bureau (Dept. of State, 1790–1840)
Decennial census
6th, 1840. Agriculture, 53
Suggestions for census of agriculture (Russell). *In his* Principles of statistical inquiry (1839), 259
6th–9th. 1840–1870. Agriculture, 258–260
8th. 1860. Agriculture (1864), 123–124, 284
9th. 1870. Statistical atlas of U. S. based on results of 1870 census (Walker). (1874), 260
9th–14th. 1870–1920. Statistical atlases, 315
10th. 1880. vol. 3. Agriculture. The cereals (Brewer). (1883), 114, 124, 262, 264, 389–391
Flour-milling processes (Neftel). (1883), 263
History of Amer. agric. (Brewer). (1883), 284–285
Land tenure a significant new item in 1880 census, 261
Participation of F. A. Walker, 259
Rept. on production of agric. (Walker). (1883), 113, 261
Statistical study of farm ownership and tenancy initiated, 769
Statistics of agric. (Walker). (1883), 263
Tobacco culture and curing (Killebrew). (1883), 263
Tobacco; statistics of manufacture (Dodge), 263
10th–15th. 1880–1930. Agric.; summary, 260–276
11th. 1890. Farms and homes: proprietorship and indebtedness (Holmes and Lord). (1896), 266, 267, 772–773, 918
Indebtedness of farmers; rept. planned by Western Economic Assoc. and B. C. Keeler, 266
Irrigation in western part of U. S. (Newell). (1896), 266
Mortgages included for first time in U. S. census, 261, 266–267
Real estate mortgages in U. S. (Holmes and Lord). (1895), 772–773, 916–918
Statistics of agric. (1895), 265–267, 775
12th. 1900. Agric. progress of fifty years (1902), 268
Census estimate of value of farm buildings in U. S. 1900, 107
Chief statistician for agric., L. G. Powers, 267
National Bd. of Trade. Committee of Inquiry. Rept. suggesting improvements, 1902, 268–270
13th. 1910. Chief statistician for agric., L. G. Powers, 270
Director of 13th Census, E. D. Durand, 270
Irrigation rept. (Teele), 830
Tenure statistics in greater detail than before; plantations in the South (1913), 273–274
13th–14th. 1910–1920. Irrigation repts. (Teele), 270, 830
14th. 1920. Farm population of selected counties (Galpin and Larson). (1924), 274–275
15th. 1930. Agriculture; new features (1932), 276
Population; number of wage earners on farms, 1910, 1920, 1930, 882
Taxes on farm property in U. S., 1004
Types of farming in U. S. (Elliott). (1933), 111
Farm management and uses of census data, 264–265
Quinquennial census. Recommended by National Bd. of Trade, Committee of Inquiry, 270
1st. 1925. Agric. farm population, new features, 275–276
Center, O. D.
Shrinkage of ear corn (1907), 547
Chaney, J. B.
joint author. See Hobson, A., 646
Chapline, W. R.
joint author, Utilization of our lands (1924), 852
Charles, T. B.
joint author. See Lininger, F. F., 751
Chart, U. S. Dept. of Agric.
Development of Bureau of Agric. Economics, 605
Cheese Marketing Research
Bakken, H. H. Marketing Wisc. foreign cheese by Federation (1926), 662
Developments in organized interest in Wisc. cheese marketing, 1910–1915; reviewed, 550–554
Hibbard, B. H. and A. Hobson. Markets and prices of Wisc. cheese (1915), 555
Macklin, T. Cooperative dairy marketing plans (1924), 661
Taylor, H. C., W. A. Schoenfeld and C. S. Wehrwein. Marketing of Wisc. cheese (1913), 553, 556, 662
Wisconsin Cheese Producers' Federation [1919–1924], 660–661
Chemung Co., N. Y.
See New York State, 376–378

Cherry Orchards
The cherry industry in the Lewiston [Ida.] orchards (1930), 467
Chester Co., Penn.
See Pennsylvania
Chicago Board of Trade proposed a commercial bureau of statistics, 201
Chicago Conference, 1923
Planning agric. cost accounting, 428–432
Choice of a Farm, 101–111
Choice of Farm Enterprises, 112–121
Christensen, C. L. (1894–)
Business set-up of a cooperative marketing assoc. (1926), 652, 646
Christie, G. I. (1881–)
Chm. Committee on reorganization of office of farm management, 422, 849
Consulted on Consolidation of Bureaus, 603
Church, L. M.
joint author. See Cooper, M. O., 420–421
Clark, C. C. (1875–)
Member crop reporting board, 227
Clark, J. P.
Comment on Farmers' Movement (1892), 33
Clarksburg, W. Va.
Local market adjustment in area (Armentrout). (1926), 461
Clayton, C. F. and J. T. Horner
Farmers' cooperative buying and selling organizations in Mich. (1928), 704
Cleaver, H. M., M. R. Cooper and J. W. Park
Indianapolis apple market, 753
joint author. See Gaylord, F. C., 639–640
Clement, C. E.
joint author. See Jesness, O. B., *et al.*, 646
Cleveland, Grover (1837–1908)
Mentioned, 859
Coffey, W. C.
Market classes and grades of sheep (1908), 547
Cole, C. S.
Cattle loans (1918), 935
Collier, G. W.
joint author. See Wilcox, R. H. *et al.*, 424–425
Collott, G. H. V.
Journey in North Amer. (1826), 286
Colman, N. J. (1827–1916), 8
Colman's Rural World (1865–1916), 8
Colorado
Labor, Mexican in agric. regions, 890
Columbia University
Studies in history of Amer. agric. Eds. H. J. Carman and R. G. Tugwell. v. 1, 1934, 338, 339
Theses, 159, 441
Colvin, E. M.
joint author. See Bercaw, L. O., 711
Combs, W. B.
joint author. See Holt, B. A., 733
Committee on Instruction in Agric., 89–90
See also Assoc. of Amer. Agric. Colleges and Exp. Stas.
Commodity Loans, mentioned, 3
Commons, J. R. (1862–1944)
Comment on Farmers' Movement (1892), 33–34
Consulted, 561, 577
Congressional Investigations, 19–29, 571–576
Connecticut
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
Bureau of Labor Statistics. *See* Government Studies, U. S. State Level
Farm management research. *See that title*
Home market studies. *See* Farm Management Research, 464–465
Lebanon soil type (Davis and Hendrikson), 1926, 375–376
Vegetable market adjustment. *See* Vegetable Marketing Research, 464–465
Conrad, J. (1839–1915)
Prof. at Halle-Wittenberg Univ., 782
Coolidge, Calvin (1872–1933)
Quoted in support of outlook service, 1924, 452
Signed Purnell Act Feb. 24, 1925, 601
Stopped Taylor's study of wheat situation, 1923, 595
Coombs, W.
Taxation of farm property, 1003
Cooper, M. O., C. M. Bennett and L. M. Church
Cost of producing milk on four dairy farms in Wisc., Mich., Penn. and N. C. (1917), 420–421
Cooper, M. R. and R. S. Washburn
Cost of producing wheat on 481 farms in . . . N. D., S. D., Minn., Kans., Nebr. and Mo. for crop year, 1919, 424
joint author. See Cleaver, H. M., 753; Moorhouse, L. A., 424
Cooper, T. P. (1881–)
Cost of Minn. dairy products, 1904–1909 (1911), 399–400
Letter, Aug. 15, 1946, on cooperative writing of Minn. Agric. Exp. Sta. Bulletin No. 97, 397
F. W. Peck and A. Boss. Labor requirements of crop production (1916), 415–419
joint author. See Hays, W. M., 76; Parker, E. C., 399
Cooperative Activities
Amer. Institute of Cooperation; origin, sessions 1–2, 1925–1926; responsible organizers, 705–708

Cooperative Activities (*cont.*)
Hibbard, B. H. Cooperative undertakings discussed, 1907, 82
Insurance Cos. *See* Insurance
Nourse, E. G. Economic philosophy of cooperation (1922), 677–678
Powell, G. H. Cooperation in agric. (1913), 687–688

Cooperative Marketing Research
Amer. Society of Equity. Policies involved in coordinating work of groups in field of agric. cooperation and marketing, 1910–1918, reviewed, 557–563
Black, J. D. and H. B. Price. Cooperative central marketing organization (1924), 654–657
Brand, C. J. Office of Markets, U. S. Dept. of Agric. [cooperative organization work] (1913), 642
Christensen, C. L. Business set-up of a cooperative marketing organization (1926), 646
Cooperative marketing studies, Federal and State: 1901–1932; reviewed, 641–709
Coulter, J. L. Problems of agric. marketing (1908), 83
Cumberland, W. W. Cooperative marketing (1917), 653
Elsworth, R. H. Agric. cooperative associations, marketing and purchasing, 1925 (1928), 646
Development and present status of farmers' cooperative business organizations (1924), 646
Erdman, H. E. Possibilities and limitations of cooperative marketing (1925), 693–696
Eyerly, E. K. Cooperative movements among farmers (1912), 570–571
Hibbard, B. H. Agric. cooperation (1914), 555
Cooperative marketings. *In his* Cooperative undertakings, 1907, 82
Holmes, G. K. Farmers' cooperation, 1901; unpub. ms., 641
Hulbert, L. S. Legal phases of cooperative associations (1922), 646
Jesness, O. B. Cooperative marketing and price control (1926), 681–683, 719
Cooperative marketing of farm products (1923), 684
joint author. See Jones, J. W., 646
Macklin, T. Marketing by cooperative sales companies (1923), 659–662
Marketing by federations (1920), 660–661
Morman, J. B. Discussion of Coulter's address, 1908, 83
Nourse, E. G. Farmers' cooperative marketing, 672–678
Plunkett, Sir Horace. Leader of democratic method of agric. organization, 643
Powell, G. H. Fundamental principles of cooperation in agric. (1914) and (1920), 691–692
Fundamentals of cooperative marketing; principle address on cooperation before Nat'l. Agric. Conference (1922), 581–583
Price, H. B., ed. Marketing of farm products (1927), 658
Sapiro, A. Advocate of centralized type of organization, 576
Leader in U. S. of autocratic method of agric. organization, 643
U. S. Dept. of Agric. Position on cooperation, 642–653
Division of Cooperative Marketing, B.A.E. Rept. on work of Div. (1929), 652
U. S. Joint Commission of Agric. Inquiry. Rept. Pt. 4 (1922), 573
Wallace, H. C., Sec'y. of Agric. Address on cooperative marketing before B.A.E.
Monday Morning Conference, Feb. 18, 1924, 649–651

Cooperative Marketing Research, classified
Butterfat
Thomsen, F. L. and W. H. E. Reid. Developing new markets for Mo. butterfat (1929), 702 (1930) 702–703
Cheese. *See* Cheese Marketing Research
Citrus Fruit
McKay, A. W. Operating methods and expense of cooperative citrus fruit marketing agencies (1924), 646
Organization and development of a cooperative citrus fruit marketing agency (1924), 646
Cotton
Brand, C. J. Cooperative cotton handling and marketing work in U. S. Bureau of Plant Industry (1913), 538–540
Gatlin, G. O. Cooperative marketing of cotton (1926), 646
Jones, J. W. and O. B. Jesness. Membership relations of cooperative associations [cotton and tobacco] (1927), 646
Rowe, W. H. Agric. credit corporations affiliated with cotton cooperative marketing assns. (1932), 952–953
Swarthout, A. V. Farmers' cooperative business study – the staple cotton cooperative assoc. (1926), 646
Cranberries, 646–647
Creameries
McGuire, A. J. Development of the cooperative creamery in Minn., 1925, 707–708

Thomsen, F. L. and W. H. E. Reid. Factors involved in buying Mo. cream (1930), 702–703
Fruit
Erdman, H. E. and H. R. Wellman. Some economic problems involved in the pooling of fruit (1927), 696–697
Kraemer, E. and H. E. Erdman. History of cooperation in marketing of Calif. fresh deciduous fruits (1933), 686, 689–691
McKay, A. W. and W. J. Kuhrt. Management problems of cooperative assns. marketing fruits and vegetables (1926), 646
Powell, G. H. Experience of Calif. Fruit Growers' Exchange, 1913, 541
Thomsen, F. L. Cooperative marketing of fruits and vegetables on the St. Louis market (1929), 701–702
Grain
Mehl, J. M. Cooperative grain marketing (1921), 646
Grain Elevators
Foster, L. G. Economic aspects of Ohio farmers' elevators (1927), 663
Hart, W. J., W. R. Fankhanel and F. L. Thomsen. Operating practices of Mo. cooperative elevators (1932), 703
Hibbard, B. H. Cooperation in the grain elevator business (1909), 663
Holman, R. A. Romance of Farmers' Grain Dealers' Assoc. of Iowa (1946), 678
Nourse, E. G. Fifty years of farmers' elevators in Iowa (1923), 674–676
Grape Industry
Phillips, H. D. Cooperative marketing in the Chautauqua grape industry (1919), 667–668
Livestock
Ashby, R. C. Practices and problems . . . in Ill. (1929), 741
Hibbard, B. H., L. G. Foster and D. G. Davis. Wisc. livestock shipping assns. (1920), 659
Loomis, R. Cooperative assns. . . . in Mo. (1923), 700–701
Macklin, T. and M. A. Schaars. Marketing livestock cooperatively (1926), 659–660
Nourse, E. G. and C. W. Hammans. Cooperative livestock shipping in Iowa in 1920 (1921), 672–673
Randall, C. G. Cooperative marketing of livestock in U. S. by terminal assns. (1928), 646
Robotka, F. Accounting records of . . . assns. (1923), 646, 674
Wallace, B. A. Cooperative livestock marketing in Ohio (1924), 664
Milk
Bartlett, R. W. Milk marketing in Penn. (1926), 747–749
Price plan for selling milk by collective bargaining organizations (1930), 749
Jesness, O. B., *et al.* Producers' cooperative milk distributing plants (1922), 646
King, C. L. *In his* Price of milk (1920), 708–709
Metzger, H. Cooperative marketing of fluid milk (1930), 646, 647–648
Stern, J. K. Membership problems in a milk marketing organization (1930), 750
Onions. *See* Onion Marketing Research
Poultry
Foster, L. G. Business study of Ohio Poultry Producers' Cooperative Assoc. (1928), 664–665
Tinley, J. M. and E. A. Stokdyk. Operations of Poultry Producers of Southern Calif., Inc. (1931), 697–698
Strawberries
Jesness, O. B. and D. G. Card. Marketing of Ky. strawberries (1923), 678–679
Phillips, C. D. and D. G. Card. Organization . . . problems of cooperative . . . assns. in Ky. (1931), 680–681
Thomsen, F. L. and G. B. Thorne . . . *In their* Economics of strawberry production . . . in Mo. (1928), 476
Tobacco
Jesness, O. B. Cooperative marketing of tobacco (1928), 684–686
Jones, J. W. and O. B. Jesness. Membership relations of cooperative assns. [cotton and tobacco] (1927), 646
Vegetables
McKay, A. W. and W. J. Kuhrt. Management problems of cooperative assns. marketing fruits and vegetables (1926), 646
Thomsen, F. L. Cooperative marketing of fruits and vegetables on the St. Louis market (1929), 701–702

AREA STUDIES

California
Agric. Economics Staff. *In its* Economic problems of Calif. agric.; rept. to Gov. of Calif. (1930), 698–699

Cooperative Marketing (*cont.*)
California (*cont.*)
Fruit cooperatives. *See above* Fruit, 686, 689–691
Poultry cooperatives. *See above* Poultry, 697–698
Research operations in the State, 1869–1930; review, 686–699
Illinois
Livestock. *See above* Livestock, 741
Iowa
Grain elevators. *See above* Grain Elevators, 678
Livestock. *See above* Livestock, 672-673
Research operations in the State, 1920–1926, 672–678
Kentucky
Research operations in Ky., 1920–1930, 678–686
Strawberries. *See above* Strawberries, 678–679
Michigan
Clayton, C. F. and J. T. Horner. Farmers' cooperative buying and selling organizations in Mich. (1928), 704–705
Minnesota
Creameries. *See above* Creameries, 702
Hughes, H. J. Marketing problems of Minn. farmers (1920), 657–658
Research operations in the State, 1913–1927, reviewed, 653–659
Weld, L. D. H. Statistics of cooperation among farmers of Minn., 1914, 653
Missouri
Research operations in the State, 1923–1932, reviewed, 700–703
Thomsen, F. L. and G. B. Thorne. Cooperative marketing for Mo. (1927), 701
New York
Booth, J. F. Farmers' cooperative business organizations in N. Y. (1928), 670
Grapes. *See above* Grape Industry, 667–668
Harper, F. A. Cooperative purchasing and marketing organizations in N. Y. State, 1933, 671–672
Research operations in N. Y. by Cornell Univ., 1919–1932, reviewed, 667–672
Ohio
Grain elevators. *See above* Grain Elevators, 663
Hauck, C. W. Farmers' produce markets in Ohio, 1929, 666
Poultry. *See above* Poultry, 664–665
Research operations in the State, 1918–1929, reviewed, 663–667
Pennsylvania
Milk. *See above* Milk, 747–749
Texas
Gabbard, L. P. *In his* Agric. economic survey of Rockwall Co., Texas (1925), 758–760
Wisconsin
Hibbard, B. H. and A. Hobson. Cooperation in Wisc. (1917), 555
Livestock. *See above* Livestock, 659–660
Research operations in the State, 1912–1932, reviewed, 659–662
Wisc. State Bd. of Public Affairs. Action on policies involved in coordinating work of various groups in field of agric. cooperation and marketing, 1910–1918, reviewed, 557–563

Corbett, R. B.
Economic study concerning operations of fruit and vegetable shippers in western N. Y. (1926), 734
Economic study of certain phases of fruit marketing in western N. Y. (1928), 669–670

Corn
Futures. *See* Futures, 504–505
Hume, A. N. and O. D. Center. Shrinkage of ear corn in cribs (1907), 547
Prices. *See* Prices of Farm Produce

Corn Belt
Carver, T. N. The corn growers (1903), 351
Life in the Corn Belt (1903), 351
Dale, E. E. Relation of range cattle industry to Corn Belt. *In his* Range cattle industry (1930), 321
Wilcox, R. H., *et al.* Cost and methods of fattening beef cattle in the Corn Belt, 1919–1923 (1927), 424–425

Corn Fodder
Armsby, H. P. Experiments at Penn. State College of Agric., 1891, 65
Food yield of forage corn (1892), 65
Hunt, T. F. and W. H. Caldwell. Experiments with corn fodder (1892), 65

Corn Storage
Rickey, L. F. Costs of storing corn on the farm (1927), 739–740

Cornell University
Agric. Exp. Sta. Ann. rept., 1912 (successful farms found by surveys studied by Livermore). (1913), 365
Ann. rept. 1918/9 (Warren on prices of farm products), 492
Bulletins
19 (1890). Fruit growing in western N. Y. (Bailey), 348
110 (1896). Extension work in horticulture (Bailey), 348
122 (1896). Second rept. upon extension in horticulture (Bailey), 349

226 (1905). Apple orchard survey of Wayne Co., N. Y. (Warren), 359–360
295 (1911). Agric. survey . . . Tompkins Co. (Ithaca, Dryden, Dandy and Lansing townships). (Warren and Livermore), 147, 357, 360, 362, 365, 807–808
341 (1914). Crop yields and prices, and our future food supply (Warren), 490
344 (1914). Agric. surveys (Warren), 358, 360, 361, 362
349 (1914). Some important factors in general farming and in dairy farming (Warren), 363
377 (1916). Cost accounts on some N. Y. farms (Ladd), 412–415
430 (1924). Rural store credit in N. Y. (Spencer), 955–956
435 (1924). Cooperative fire insurance cos. in N. Y. (Bartlett), 982–983
440 (1925). Economic study of marketing N. Y. potatoes (Rasmussen), 669
443 (1925). Marketing of cabbage (Misner), 734
445 (1925). Preliminary survey of milk marketing in N. Y. (Norton and Spencer), 735
453 (1926). Economic study . . . operations of fruit and vegetable shippers in western N. Y. (Corbett), 734
459 (1927). Demand side of N. Y. milk market (Ross), 735–736
461 (1928). Farmers' cooperative business organizations in N. Y. (Booth), 670–671
464 (1928). Economic study of certain phases of fruit marketing in western N. Y. (Corbett), 669–670
469 (1928). Collection of general property taxes on farm property in U. S. — emphasis on N. Y. (Kendrick), 1009–1010
473 (1931). Cost of handling fluid milk and cream in country plants (Tucker), 736–737
475 (1929). Production and marketing of N. Y. market peas (Walker), 734–735
484 (1929). Comparison of cost of maintenance of large and small county boards in U. S. (Kendrick), 1010–1012
511 (1930). Collection of taxes by State of N. Y. — division of these revenues with units of local government (Kendrick), 1012–1013
518 (1931). Statistical study of milk production for the N. Y. [City] market (Catherwood), 736
527 (1931). Supply side of N. Y. [City] milk market (Ross), 736
539 (1932). Economic study of agric. in northern Livingston Co., N. Y. (Warren), 359, 364, 365
544 (1932). Cooperative purchasing and marketing organizations in N. Y. State (Harper), 671–672
549 (1932). Operations of Federal Land Bank of Springfield [Mass.] from its organization in 1917 to May 31, 1929 (Hill), 964–966
565 (1933). Costs and returns in producing apples in . . . Niagara Co. N. Y. (La Mont), 359
Conference of rural leaders, 1911, 350
Cost accounting at Cornell, 411–415
Courses given. *See* Educational Facilities
Farm Economics, vol. 8 (1933). Fire insurance on different classes of land (Lewis), 983
Memoirs
141 (1932). Multiple correlation analysis as applied to farm management research (Warren), 375
160 (1934). Methods used in economic study of land utilization in Tompkins Co. N. Y. (Lewis), 865
President. Ann. rept. 1894/5, 1895/6, 75
Register, 1894/5, 1895/6, 1900/1, 1901/2, 75, 79
Statistical type of farm management survey developed by Cornell, 384–385
Cost Accounting: Distribution
Andrews, F. B. Costs of hauling crops from farms to shipping point (1907), 525
Jefferson, L. P. Cost of marketing apple crop of 1923 (1925), 726–727
Shepherd, G. S. Burden of increased costs of distribution (1932), 502
Cost Accounting: Production
Bennett, M. K. Farm cost studies in U. S. (1928), 388
Bordley, J. B. Cost accounting. *In his* Essays and notes on husbandry (1799), 388
Boss, A. Forty years of farm cost accounting records (1945), 388, 395–398, 423
Brewer, W. H. Place of cost accounting in agric. production. *In his* Rept. of cereal production of U. S. (1883), 114–115
Conference of Research Workers in Field of Farm Management and Cost of Production. Chicago, 1923; participants; repts. of Committee 1 and 2, 428–432

Cost Accounting: Production (*cont.*)
Cost accounting studies, reviewed, 388–446
Dixon, H. M. and H. W. Hawthorne, 368
Forster, G. W. and R. J. Saville. Cost accounting. *In their* Profitable farm combinations (1927), 440
Hays, W. M. and E. C. Parker. Cost of producing farm products (1906), 446
Hunt, T. F. Cost accounting. *In his* Lectures on the history of agric. and Rural Economics (1899), 391
Ingersoll, C. L. and S. W. Perin. Cost of farm crops (1893), 391
Peck, F. W. Methods of conducting cost of production and farm organization studies (1921), 427–428
Roberts, I. P. Cost accounting one contribution of Roberts at Cornell, 1874–1903, 74
Taylor, H. C. Cost accounting method of studying farm management problems (1911), 403–407
Objectives in agric. cost accounting (1923), 425–427, 439
Price fixing and cost of farm products (1918), 407–408, 555
and S. W. Mendum. War prices and farm profits (1919), 368, 370–371
Tolley, H. R., J. D. Black and M. J. B. Ezekiel. Input as related to output in farm organization and cost-of-production studies (1924), 138–140, 442–446
U. S. Office of Farm Management and Farm Economics (Dept. of Agric.). Rept. of committee appointed . . . to consider . . . methods of making cost of production studies; members, 422–424
Warren, G. F. Differences in amount of labor and capital used per acre in producing various crops; table. *In his* Farm management (1913), 135, 411–412
and K. C. Livermore. "Productive man-work units" or "man equivalent" idea developed in 1912, 364

PRODUCT STUDIES

Apples
La Mont, T. E. Costs and returns . . . producing apples in . . . Niagara Co., N. Y., 1926–1928 (1933), 359
Beef Cattle
Thorne, C. E. Relative cost of beef and butter [production] (1894), 393
U. S. Office of Farm Management and Farm Economics. Ann. rept., 1920 [status of cost of cattle fattening studies; joint Federal–State studies being made] (1920), 423–424
Wilcox, R. H., *et al.* Cost and methods of fattening beef cattle in the Corn Belt, 1919–1923 (1927), 424–425
Butter
Thorne, C. E. Relative cost of beef and butter [production], 1893 (1894), 393
Cereals. *See below* Grains
Corn
Goddard, L. H. and W. L. Elser. Labor cost of producing corn in Ohio (1913), 400–402
Robinson, H. A. Expense of raising corn and wheat (1894), 391–393
Snow, B. W. Cost of growing corn actually determined (1897), 393–394
Weston, N. A. Cost of production of corn and oats in Ill. in 1896 (1898), 394
Cotton
Curtis, G. W. and J. W. Carson. Cost of cotton production and profit per acre (1893), 391
Moorhouse, L. A. and M. R. Cooper. Cost of producing cotton (1921), 424
Robinson, S. Cost data (1849). *In his* Selected writings. H. A. Kellar, ed., v. 2 (1936), 388
U. S. Office of Farm Management and Farm Economics, Dept. of Agric. Ann. rept., 1920 [number of cost records obtained for six named states — Ala., Tex., S. C., Ga., Miss., Ark.], 423–424
Watkins, J. L. Cost of cotton production (1899), 394
Dairy Products
Cooper, T. P. Cost of Minn. dairy products [production], 1904–1909 (1911), 399–400
Hoard, W. D. Necessities and demands of modern dairying (1896), 393
Dairy products: Butter. *See above*
Dairy products: Milk. *See below*
Fertilizer. *See* Fertilizer
Grains
Brewer, W. H. The cereals (1883), 114, 389–391
Weston, N. A. Cost of production of corn and oats in Ill. in 1896 (1898), 394
Milk
Cooper, M. O., C. M. Bennett and L. M. Church. Cost of pro-

ducing milk on four dairy farms in Wisc., Mich., Penn., and N. C. (1917), 420–421
Ezekiel, M. J. B., *et al.* Variations in physical requirements and economic costs of milk production on Wisc. dairy farms (1927), 141, 410–411
Mendum, S. W. Cost of milk production on 48 Wisc. farms (1923), 408–410
Peck, F. W. and A. Boss. Cost of milk production (1918), 419–420
Sugar Beets. *See* Sugar Beet Industry, 423, 424
Wheat
Agric. press. Comments on status of wheat production cost, 1894–1896, 393–394
Buffum, B. C. Cost and profit of growing wheat (1894), (1895), 391
Cooper, M. R. and R. S. Washburn. Cost of producing wheat on 481 farms in six named states for crop year 1919 (1921), 424
Dodge, J. R. Cost of producing wheat (1894), 393
Robinson, H. A. Expense of raising corn and wheat (1894), 391–393
Snow, B. W. Some estimates of wheat cost (1894), 393 (1897), 394
U. S. Office of Farm Management and Farm Economics. Ann. rept., 1920 [number of cost records obtained for 1920 for six named states], 423
AREA STUDIES
Illinois
Farmers' financial accounts; introduced by Handschein in Ill., 381
Handschein, W. F. Cost accounting work in Ill., 1912–1922; route system; supervised farm accounting, 402–403
Oats, 394
Minnesota
Minn. method, 1902–1919; route systems, etc., 81, 394–400
New York State
Ladd, C. E. Cost accounts on some N. Y. farms, 1912–1913 (1916), 412–415
Ohio
Ohio method, 1905–1923; correspondence system, labor records, etc., 400–402
Wisconsin
Extension work in Wisc.; financial records featured, 381
McNall, P. E. and L. S. Ellis. Farm costs . . . in the production of Walworth Co. crops and livestock (1928), 411
See also Product Studies *above*
Cotton Belt, 314
Cotton Futures Act Administration reviewed, 614–630
Cotton Industry
George, J. Z. Condition of cotton growers in the U. S. (1895), 26–29
Hammond, M. B. Cotton industry. Pt. 1 (1897), 287–289, 903–905
Holmes, G. K. Peons of the South (1893), 30–31
Loring, F. W. and C. F. Atkinson. Cotton culture and the South (1869), 288
Phillips, U. B. Economic cost of Slaveholding in the Cotton Belt (1905), 313
U. S. Census Bureau. Bulletin 40. Cotton production and cottonseed products: 1905 (1906), 220
Youngblood, B. Possibilities of Brazil as competitor of U. S. in cotton growing (1926), 760
Cotton Industry, classified
Acreage. *See below* Crop Reporting
Cooperative Marketing Research. *See that title*
Cost of Production. *See* Cost Accounting: production
Crop Reporting
Becker, J. A. Cotton crop forecasts of U. S. (1926), 245
McCandless, D. A. Count system applied to cotton acreage in Miss., 241
U. S. Crop Reporting Bd. (Dept. of Agric.) Cotton crop rept. for Aug., 1927; departure from basic pars, 245
U. S. Div. Statistics (Dept. of Agric.) Cotton acreage rept., 1905, challenged and revised, 217–220
U. S. Special rept. on revised estimates of U. S. cotton acreage and yield, 1866–1931, 220
Financing. *See* Farm Finance and Agricultural Credit
Insurance. *See* Insurance
Marketing Research
Cox, A. B.
Cotton prices and markets (1926), 503, 713–715
Marketing Amer. cotton in England (1928), 717
Marketing Amer. cotton on continent of Europe (1928), 717
Services in cotton marketing (1926), 715–717
Opposition of merchants and speculators to B. A. E. Outlook repts. of 1923 and 1924, 453–454, 456

Cotton Industry (*cont.*)
Prices. *See* Prices of Farm Products
Standards. Universal standards for Amer. cotton, 618–630
Cotton Standards
Universal, 618–630
Coulter, J. L. (1881–)
Industrial history of the valley of the Red River of the North. Ph.D. thesis Univ. Wisc., 1908 (1910), 297–299
Organization among the farmers of U. S. (1909), 977
Problems of agric. marketing, 1908, 83
joint author. See Fitz, L. A., 609–610
Country Life Commission
Organized in 1909 by L. H. Bailey; members, 353
Coutts, W. A.
Agric. depression in U. S.: causes and remedies (1897) 16, 18, 46–49
Cowden, T. K.
Marketing Penn. potatoes in 15-pound containers (1932), 751–752
Cox, A. B. (1884–)
Cotton marketing problem, 645
Cotton prices and markets (1926), 503, 713–715
Marketing Amer. cotton in England (1928), 717
Marketing Amer. cotton on the continent of Europe (1928), 717
Services in cotton marketing (1926), 715–717
joint author. See Ely, R. T., 867
Cranberries
Hobson, A. and J. B. Chaney. Sales methods and policies of a [cranberry] growers national marketing agency (1923), 646, 647
Crawford, G. L.
Services, facilities and costs of marketing vegetables in the Lower Rio Grande Valley of Tex. (1928), 761
and L. P. Gabbard. Relation of farm prices to quality of cotton (1928), 761
Creameries
Black, J. D. and E. S. Guthrie. Economic aspects of creamery organization (1924), 730–732
Holt, B. A. and W. B. Combs. Judging creamery efficiency (1926), 733
Cooperative Marketing Research. *See that title*
Credit, 899–975
Crickman, C. W.
joint author. See Pond, G. A.; Sallee, G. A.
Critchfield, B. H.
Demand, marketing and production of Ore. and Wash. prunes (1927), 717–719
et al. Louisiana agric. progress and opportunities (1926), 466
joint author. See Berger, A. C., 460; Dunlap, R. B., 459, 461; **Pond, G. A.; Sallee, G. A., 461**
Crocheron, B. H. (1882–) and W. J. Norton
Fruit markets in eastern Asia (1930), 469, 753–754
Crop Competition
Taylor theory, 117
Crop Diversification
See Diversified Farming
Crop Insurance, 983–988
Crop Reporting
Becker, J. A. and C. L. Harlan. Development in crop and livestock reporting since 1920 (1939), 241–246, 250–252
Judd, O. Monthly crop reporting experiment, 1862, 176–179, 180
National Board of Trade. Committee on Crop Repts., 1895, 204–213
Crop Reporting: Federal Level, 1839–
1839–1849. Patent Office (State Dept.)
Crop estimates initiated by Comr. of Patents (Ellsworth) in 1839, 170–173
1849–1861. Patent Office (Interior Dept.)
Circular, Feb. 29, 1856; crop and related figures requested of states, 175–176
Decentralization proposals by U. S. Comr. of Patents (Mason), 175
Discontinued by U. S. Comr. of Patents (Ewbank), 1849, 174–175
1862–. Dept. of Agriculture
Ann. and mo. repts., etc., 1863–1933; overall summ., 179–257
Crop Reporter; published 1899–1913, v. 1–15, 209
Bureau of Crop Estimates, 1914–1921. Cooperative agreement with depts. of agric. of nine named states (Ark., Ga., Ala., N. C., W. Va., Ill., Iowa, Okla., Idaho) for pooling crop reporting, 1919, 236–237
Crop and livestock reporting service; letter Secy. of Agric. (Meredith). (1920), 237–239
Decentralization of crop and livestock estimate, 1927–1932, effectuated, 253–254
Merged into unit which became B.A.E. in July, 1922, 239
Murray, N. C. Preparation of Bureau estimates, 1917, 235–236
Proceedings of meeting of field agents, crop specialists, etc., Jan., 1917, 231–236
Reorganization of 1914, appraisal of, 236
Bureau of Markets and Crop Estimates. Committee on Methods of Crop Estimates. Membership; suggestions, 1922, 240

Bureau of Statistics, 1903–1914.
Crop Reporting Board established 1905; operations, 226–227
Special rept. on revised estimates of U. S. cotton acreage and yield, 1866–1931, 1933, 220
Title of Bureau of Crop Estimates assumed July 1, 1914, 230
Division of Crop Estimates. Reorganization, 1921, 239
Division of Statistics, 1893–1903.
Foreign crop reporting service improved; use of cable begun, 1902, 215
Crop Reporting: Federal/State Level
See also above Dept. of Agric. Cooperative agreements, 236–237
Crop Reporting: State Level
Maryland State Agric. Soc. Letter, 1855; publication of crop statistics, 175
Statistics gathered by assessors of notable efficiency in six named states, 236–237
Crop Rotation
Interest of W. M. Hays, 76
Crosby, H. T.
joint author. See Armentrout, W. W., 460
Crowell, J. F. (1857–1931)
Agric. question has sectional character, 1896, 41
Distribution of farm products (1901). *In* U. S. Industrial Commission. Repts. v. 6, 516–524
Cruess, W. V.
joint author. See Mrak, E. M., 753
Cumberland, W. W.
Cooperative marketing, 1917, 653
Cunningham, W. (1849–1919)
Consulted by H. C. Taylor in 1900, 289
Currency Issue
See Silver Coinage, 3, 6–7, 8, 9–10, 21, 27–28
Curtis, G. W. and J. W. Carson
Cost of cotton production and profit per acre, 1893, 391
Custis, G. W. P. (1781–1857)
Sheep shearing on Arlington farm, 282

D

Daggit, E. M.
Assigned to study price trends in Div. of Statistical and Historical Research in U. S. Dept. of Agric., 454
Dairy Farming
Hoard, W. D. Necessities and demands of modern dairying (1896), 393
Warren, G. F. Some important factors in general farming and in dairy farming (1914), 363
Dairy Farming, classified
Cost of production. *See* Cost Accounting: Production
Credit plans
Wisconsin plans. *See below* Area Studies
Milk. *See* Milk Marketing Research; Milk Production
AREA STUDIES
California
Voorhies, E. C. Economic aspects of the [Calif.] dairy industry (1927), 472
Idaho
Idaho Agric. Exp. Sta. Bulletin 152. Dairy situation in Idaho (1927), 467
Kansas
Hodges, J. A., R. S. Kifer and R. D. Nichols. Dairy farm organization in S. E. Kans. (1931), 440
Minnesota
Cooper, T. P. Cost of Minn. dairy products, 1904–1909 (1911), 399–400
Pond, G. A. Study of dairy farm organization in S. E. Minn. (1926), 439
Virginia
Maxton, J. L. Manufacturing and marketing dairy products in Va. (1931), 762
Wisconsin
Credit plans; Ashland dairy plan and Superior Rural Development Assoc. plan, 932–934
Schafer, J. *In his* History of Agric. in Wisc. (1922), 296
Scott, W. A. Credit needed for shift to dairy farming in Wisc., 78
Wisc. Dairymen's Assoc. organized, 1872, 296
Dairy Marketing Research
Macklin, T. Cooperative dairy marketing plans (1924), 661
Market News Service; operation, 634
Dale, E. E. (1879–)
Range cattle industry (1930), 321
Darg, J. J.
Sources and relative value of crop data, 1917, 234
Davenport, E. (1856–1941)
Course in comparative agric., Univ. of Ill. succeeding G. E. Morrow, 1894/5, 60
Market classes of horses (1901), 547
Davis, D. G.
joint author. See Hibbard, B. H., 659
Davis, I. G. (1885–1939) and C. I. Hendrickson
Soil type as a factor in farm economy. I. Town of Lebanon [Conn.], 1922–1923 (1926), 375–376
and F. V. Waugh. Connecticut market demand for vegetables (1926), 464–465
Day, O. A.
joint author. See Young, E. C., 500–501

Dean, A. F.
Fire insurance rates, 978
De Candolle, A.
Mentioned, 63
Delaware
Univ. of Del. Farm Management course, 81
Demand Factor
Coutts, W. A. *In his* Agric. depression in U. S. (1897), 46–47
Dunlap, R. B., B. H. Critchfield and M. V. Carroll. Adjusting production to meet home market demands (1924), 459, 461
Hoard, W. D. Necessities and demands of modern dairying (1896), 393
Jefferson, L. P. Consumer demand for apples (1929), 729–730
AREA STUDIES
Connecticut
Market demand for vegetables (Davis and Waugh). (1926), 464–465
Michigan
Consumer demand for apples (Gaston). (1931), 745
Pennsylvania
Blair Co., adjusting production to meet home market demands (Dunlap, Critchfield and Carroll). (1924), 459
Virginia
Clifton Forge-Covington trade area, home market demands (Vernon, Johnston and O'Byrne). (1929), 466
West Virginia
Beckley area, home market demands (Armentrout). (1930), 461
Clarksburg area, home market demands (Armentrout). (1926), 461
South central W. Va., home market demands (Armentrout, *et al.*). (1924), 460
Wheeling area; home market demands (Armentrout). (1930), 461
Demonstration Work
See Extension Work
Depressions
See also Booms; Demand Factor
Congressional investigations and reports, 1892–1895, 19–29
Coutts, W. A. Agric. depression in U. S.: causes and remedies (1897), 17–18, 46–49
Depression of 1920's signal for renewed studies of farm management adjustments, 447
Depression of 1923; wheat situation, 321
Emerick, C. F. Remedies for agric. depression. *In his* Agric. discontent (1897), 45–46
Peffer, W. A. Agric. depression; causes and remedies, 1894 (1895), 19–25
Peters, E. T. Agric. depression due mainly to rise in margin of cultivation, 1896, 42
Polk, L. L. Agric. depression: causes, remedies (1890), 4
Sumner, W. G. Cause and cure for hard times. 1896 repr. (1918), 37
Taylor, H. C. Depression of 1920; suggestions. *In his* Adjustment of farm business to declining price levels (1921), 447
De Vault, S. H. (1889–)
Supply and distribution of Connecticut Valley cigar leaf tobacco (1919), 564
De Vries, W.
The Mich. land economic survey (1928), 864
Dewees, A. Interviews quoted
Adams, F., 1941, 687, 689
Boss, A., 1941, 77
Carver, T. N., 1941, 134, 353
Fetter, F. A., 1939, 75
Gay, E. F., 1941, 313
Hibbard, B. H., 1940, 294
Lauman, G. N., 1939, 74, 356
Thomson, E. H., 1939, 74
Dietrich, W. (1871–)
Market classes and grades of swine (1904), 547
"Differential Profit" Theory
F. A. Walker, 155
Diversified Farming
Brewer, W. H. Economics of diversified farming. *In his* Rept. of cereal production of U. S. (1883), 113–115
Carver, T. N. Choice of farm enterprises in diversification. *In his* Principles of rural economics (1911), 119
George, J. Z. Practice commended. *In his* Condition of cotton growers (1895), 26–29
Gregory, J. M. Effect on farm labor. *In his* New political economy (1882), 57
Dixon, H. M. and H. W. Hawthorne
Farm profits — figures for the same farms for a series of years . . . Washington Co., Ohio; Clinton Co., Ind.; Dane Co., Wisc. [1910–1918] (1920), 368
joint author. See Spillman, W. J., 151–152; Thomson, E. H., 808–810
Doane, D. H. (1883–)
Farm survey work in Mo., 1908, 81
Univ. of Mo. Dept. of Farm Management. Teaching, 1910, 81
Controversy on "farm management" and "rural economy"; position taken in 1910/11, 91

Dodge, J. R. (1823–1902)
Attendance at first bienn. meeting of International Statistical Institute, Rome, 1887, as member and as statistician of U. S. Dept. of Agric., 193, 254
Chief statistician U. S. Dept. of Agric., 1866–1878, 1881–1893; ann. and monthly repts. cited and extracts, 183–199
Criticism of work of Div. of Statistics, U. S. Dept. of Agric. under Dodge by Nat. Bd. of Trade, 199–205
Tribute to work of Dodge, 510–511
Works cited
Cost of producing wheat (1894), 393
Rept. on Amer. farm labor. U. S. Industrial Commission v. 11 (1901), 877–880
Statistics of manufacture of tobacco and its commercial distribution, exportation and prices (1883), 262–263
Wages of farm labor in U. S., 1866–1892, (1892), 874–877
Dodge, L. G. (1882–)
Profitable and unprofitable farms in N. H. (1913), 367
Donald, J. S. (1869–1934)
Farm management demonstration work at Univ. of Wisc. financial records featured, 1919, 381
Doomsday Survey
William the Conqueror, 1085–1086, 327
Dot Maps, 303, 316, 318
Dowrie, G. W.
Did deflation ruin the farmer and would inflation ruin him? (1925), 969
Drew, F. M.
Present farmers' movement (1891), 905–907, 993–994
Duffy, W. A., A. R. Whitson and G. S. Wehrwein
Land economic inventory of northern Wisc. (1929), 864
Duggar, J. F.
Member subcommittee on rural economics and farm management, 1911, 89, 90
Dumping
Shepherd, G. S. Does Iowa "dump" its grain? (1929), 502
Dunlap, R. B. (1890–), B. H. Critchfield and M. V. Carroll
Adjusting production to meet home market demands in Blair Co., Penn. (1924), 459, 461
Durand, E. D. (1871–)
Director of 13th U. S. Census, 1910, 270
"Duty of Water," 133
See also Irrigation Economics
Duvel, J. W. T. (1873–)
Grain standardization and its relation to marketing conditions, 1913, 537
and G. W. Hoffman. Major transactions in the 1926 Dec. wheat future (1928), 504
Speculative transactions in the 1926 May future (1927), 504

E

Earle, J. T. (1814–1882), Pres.
See Maryland State Agric. Society, 175
Ebersole, J. F.
Cattle loan banks (1914), 935
Economic Council, 602
Educational Facilities
Association of Amer. Agric. Colleges and Exp. Stas. Committee on Instruction in Agric. Rept., 1911 (*Also* Circular 115 U. S. Office of Exp. Stas.). (1912), 90–95
Committee on Methods of Teaching Agric. Rept. 1; 1896 (*Also* Circular 32 U. S. Office of Exp. Stas.), 54
Repts. 1–5, 8. 1896–1912, 70–71
Bailey, L. H. The state and the farmer (1908), 349
Cornell University
Faculty. *See* Bailey, L. H.; Hunt, T. F.; Warren, G. F.; Willcox, W. F. and names listed in following chronology
1874–1908. College of Agric.; course under I. P. Roberts; major contribution farm accounting, 74–75
1894. Dept. of Political Science; course in economics of agric. under F. A. Fetter, 75
1894/5. Register and President's ann. rept. Fetter's course in economics of agric., 75
1895/6. Register C. J. Bullock's course treating of land tenure, rent, depopulation of rural districts, land banks, etc., 75
No other courses of this kind recorded until 1902, 75
1901. Register 1900/1. Course in history of agric. under G. N. Lauman, 79, 81
1902. Register, 1901/2. Course in economics of agric. under G. N. Lauman, 79, 81
1903–1907. Course in farm management under T. F. Hunt, 80
L. H. Bailey became Dean of College of Agric., 349
1907. Course in farm management under G. F. Warren, succeeding T. F. Hunt, 81
1908. Graduate School of Agriculture, 3rd Session; Lauman, Taylor, and Warren speakers, 83

Educational Facilities (*cont.*)
Cornell University (*cont.*)
1911. Dept. of Farm Management and Farm Crops. Ann. Rept. (Warren); summary of Tompkins Co. survey, 363
1920. Dept. of Agric. Economics created, 668
Early development of agric. economics in colleges of agric., 1867–1894; summary, 53–79
Graduate School Dept. of Agric. *See below,* 604
Graduate School of Agriculture
Conducted by Assoc. of Amer. Agric. Colleges and Exp. Stas., 83
Hunt plan for School approved by W. O. Thompson, Pres. Ohio State Univ., 1900, 71
Sessions 1–7, 1902–1916, 83
4, 1910. Iowa State College, Ames, Iowa, 71, 83
Harvard Univ. Course in economics of agric. with special reference to Amer. conditions started in 1904, under T. N. Carver, 81
Hays, W. M., *et al.* Farm management: organization and teachings (1912), 76
Higbie, E. C. Objective method . . . fundamental principles in secondary agric. education (1921), 159–161
Marketing work in agric. colleges prior to 1921, 547–566
Statistical summary of position of agric. economics as taught in U. S. in 1896, 54
True, A. C. History of agric. education in U. S., 1785–1925 (1929), 71
United States Dept. of Agric. Graduate School
In-service training initiated in Office of Farm Management and Farm Economics became Graduate School, Dept. of Agric., 604
FACILITIES OF STATES
California. Univ. of Calif.
1910. Farm management course under L. Anderson, 81
1912. College of Agric. T. F. Hunt, dean, 62
Delaware. Univ. of Del.
1910. Farm management course under H. Hayward, 81
Illinois. Industrial Univ. (1862–1884)
1868. Course in agric. economy offered, 58
1877–1894. Prof. of agric. G. E. Morrow, 58–60
1886. Address: Our farming, its changing condition and outlook (Morrow), 58–59
1888. Rept. to Bd. of Trustees (Morrow), 58–59
1894/5. Course in comparative agric. under E. Davenport, succeeding G. E. Morrow, 60
1906. Graduate School of Agric. 2d Session, 83
Iowa. State College of Agric.
1886. W. M. Hays, ass't. in agric., 76
1904. Course in agric. economics under B. H. Hibbard; special attention to marketing, 81
1910. Graduate School of Agric. 4th Session, 1910, 83
Kansas. State Agric. College
1879. G. T. Fairchild, Pres., 71
1910. Farm management course under E. H. Webster, 81
1932. Marketing work prior to 1932, 723–724
Massachusetts. Agric. College
Faculty. *See* Walker, C. S.
President. *See* Butterfield, K. L.
1908. Course in agric. economics under A. E. Cance, 81
Course in farm management under J. A. Foord, offered, 81
1910. Dept. of Agric. Economics established; A. E. Cance at head, 563
1916. Graduate School of Agric. 7th Session, 83
Michigan. Agric. College
1877–1879. Course in political economy under G. T. Fairchild; comment by L. H. Bailey, 71
1912. Graduate School of Agric. 5th Session, 83
Minnesota. Agric. College
1888–1891, 1893–1907. W. M. Hays, Prof. of Agric., 76
1902. Route system of farm cost accounting started by W. M. Hays and A. Boss, 81
Missouri. Univ. of Mo.
1910. Dept. of Farm Management under D. H. Doane, 81
1914. Graduate School of Agric., 83
Nebraska. Univ. of Neb.
1909. Farm management course under C. W. Pugsley, 81
North Dakota. Agric. College
1892/3. W. M. Hays, student, 76
Ohio. State Univ.
1892–1903. Courses on farm crops and rural economics, 62, 66–67, 80, 356
Prof. of Agric. and Dean of College, T. F. Hunt; succeeded by H. C. Price, 62, 81
1902. Graduate School of Agric. 1st Session, 83
Agricultural Students Union, 400
Oregon. State College
1907. Course in farm management under H. D. Scudder, 81
Pennsylvania. College of Agric.
1891. Prof. of Agric. T. F. Hunt, 62
1891/2. Catalogue; recasting of courses by Hunt, 64–65

1891–1907. Courses on farm management offered under Hunt, 64, 81
1907–1912. Dean of College, T. F. Hunt, 62
Rhode Island
1898–. Course in farm management under F. W. Card, 81
Texas. Agric. College
1917. Farmers' Short Course. 8th., 1917. Taylor. Lectures on land tenure, 820–822
West Virginia. State Univ.
1897–1910. Course in rural economics under T. C. Atkeson, 80
Wisconsin. Univ. of Wisc.
Foundations of agric. economics at Wisc. laid by R. T. Ely and W. A. Scott and carried on by H. C. Taylor and B. H. Hibbard, 79
1874/5. Course in history of agric., 77
1887/8. Course in farm management under W. A. Henry, 77
1889–1932. Agric. history stimulated at Univ. of Wisc. by R. T. Ely, 1892–1925, W. A. Scott, 1892–1932, F. J. Turner, 1889–1910, and students, 287–315
1892–1903. School of Economics. Course in economics of agric. under W. A. Scott, 77–78
1896. Course on forestry economics given by B. E. Fernow, first such course on this continent or in England, 858
1900. Contribution to marketing problems prior to 1900, 550
1902/3. Course in agric. economics under H. C. Taylor, 81
1909. Course in farm management under D. H. Otis, 81
1910/11. Farmers' Week Program, lecture on prices of farm products, by H. C. Taylor, 488
Invention of Babcock Test by chief chemist, 550

Edwards, E. E. (1900–1952)
Amer. agric. — the first 300 years (1941), 321–323

Edwards, P. K.
joint author. See Overton, M. H., 461

Egg Marketing Research
Menefee, E. R. Marketing of eggs on a graded basis (1929), 640
Thompson, C. W. Studies in egg marketing (1913), 550
AREA STUDIES
Kentucky
Card, D. G. Marketing Ky. eggs (1928), 721
Pennsylvania
Lininger, F. F. Egg marketing by farmers in Penn. (1927), 750
Study of egg and poultry consumption in Penn. (1928), 751

Egg Production Estimates
Sample data basis, begun in fall of 1924; development through 1931, 252

Eke, P.
joint author. See Hunter, B.; Severance, G., 467

Elevator Management Research
Metzger, H. and H. B. Price. Economic aspects of local elevator organization (1929), 733
Price, H. B. and C. M. Arthur. Management problems of farmers' elevators (1925), 733
AREA STUDIES
Iowa
Fifty years of farmers' elevators in Iowa (Nourse). (1923), 674–676
Missouri
Operating practices of Mo. cooperative elevators (Hart, Fankhanel and Thomsen). (1932), 703
Montana
Current problems of Mont. farmers' elevators (1930), 614
Ohio
Economic aspects of Ohio farmers' elevators (1927), 663
Farmers' elevator movement in Ohio (Erdman). (1918), 663

Eliot, J. (1685–1763)
Essays upon field husbandry in New England . . . 1748–1762 (1934), 283, 338–339
True, R. H. Jared Eliot, minister, physician, farmer (1934) extr., 339

Elliott, F. F. (1895–)
Adjusting hog production to market demand (1927), 741
Types of farming in U. S. Census of U. S., 15th, 1930 (1933), 111

Ellis, L. S. (1899–)
joint author. See McNall, P. E.

Ellsworth, H. L. (1791–1858)
Crop estimates initiated, 170–173
1838–1845. Crop and livestock estimates, 169
1839–1845. Comr. of Patents (State Dept.), 170–175
1839. Letter to chrm. House Committee on Patents; initiation of crop and livestock estimates, 170
1842. Ann. rept.; conception in 1840 of value of statistics to the farmer, 53
1845. Ann rept.; wages of farm labor, 873
Resignation; succeeded by E. Burke, 173

Elser, W. L. (1886–)
joint author. See Goddard, L. H., 400–401

Elsworth, R. H.
Agric. cooperative associations, marketing and purchasing, 1925 (1928), 646
Development and present status of farmers' cooperative business organizations (1924), 646
Ely, R. T. (1854–1943)
1885. Co-founder Amer. Economic Assoc., 857
1892. Leaves Johns Hopkins Univ. to go to Univ. of Wisc., 858
1892/3. Director School of Economics, Political Science and History, Univ. of Wisc., 77
Foundations for teaching agric. economics at Wisc. by Ely and W. A. Scott, carried on by H. C. Taylor and B. H. Hibbard, 79
Lubin prize essay proposal, Ely comment on, 17
Mentioned, 54
Profits theory challenged by H. C. Taylor, 155
Works about Ely
Taylor, H. C. and G. S. Wehrwein. Richard T. Ely [land economist] (1943), 857
Works cited
Conservation and economic theory (1917), 857
Economics of irrigation. Unpubd. rept., 1904, 830–837
Farmers' movement. 1892, 35
Ground under our feet (1938), 857, 859
Landed property as an economic concept and as a field of research (1917), 860–861
Robber taxes (1924), 999–1000
and C. J. Galpin. Tenancy in an ideal system of landownership (1919), 824–826
, R. H. Hess, C. K. Leith and T. N. Carver. Foundations of national prosperity (1917), 857
, B. H. Hibbard and A. B. Cox. Credit needs of settlers in upper Wisc. (1920), 867, 934
Emerick, C. F. (1867–1920)
Analysis of agric. discontent in U. S. (1897), 17, 45–46, 907–909
Government loans to farmers (1899), 901–902
Emmons, E.
Agricultural surveys, 342
Engelbert, E. E.
joint author. See Valgren, V. N., 939–941
England
Agric. surveys. *See* Caird, J.; Macdonald, J.; Marshall, W.; Young, A.
Crop rotation systems, 116
Decline of land-owning farmers in England (Taylor). (1904), 289, 351, 780–782
English farming, past and present (Prathero). (1912), 332
Englund, E. (1893–)
Assessment and equalization of farm and city real estate in Kans. (1924), 1005–1006
Federal aid as part of . . . agric. policy — special reference to distribution of tax levies (1926), 1007
Program of taxation for Kans. (1923), 1005
Tax revision in Kans. (1924), 1006
Trend of real estate taxation in Kans., 1910–1923 (1925), 1006–1008
Epstein, L.
joint author. See King, W. I., 459
Erdman, H. E. (1884–)
Credited with developing economic outlook studies made 1926–1932 relating to crop and livestock products important to Calif., 470
Farmers' elevator movement in Ohio (1918), 663
Possibilities and limitations of cooperative marketing (1925), 689–693, 693–696
and H. R. Wellman. Some economic problems involved in pooling of fruit (1927), 696–697
joint author. See Hibbard, B. H.; Kraemer, E.; Stokdyk, E. A., *et al.*
Estabrook, L. M. (1869–1937)
1913–1914. Chief statistician, Bureau of Statistics, U. S. Dept. of Agric., succeeding V. H. Olmsted, 230–237
1914. Rural mail carrier service for gathering livestock statistics; negative reaction, 246
1919. Reorganization in 1914 of Bureau of Crop Estimates, appraised. *In*: Ann. rept. Dept. of Agric., 1919 (1920), 236
1921–1922. Associate chief Bureau of Markets and Crop Estimates, 602, 603, 604
1922. Associate chief Bureau of Agric. Economics, 239, 604
Estimates
Acreage. *See* Acreage Estimates
Crop estimates
1841–1844. Initiated by and continued under U. S. Comr. of Patents, H. L. Ellsworth. *See* Ellsworth, H. L., 170–173
1846–1848. Publication under Comr. Burke. *See* Burke, E., 173–174
1849–1855. Discontinued by Comr. Ewbank. *See* Ewbank, T., 174
Egg Production. *See* Egg Production Estimates, 252
Livestock. *See* Livestock Estimates
Europe
Cereal production of Europe (Rutter). (1908), 525
European grain trade (Rutter). (1908), 525

Everitt, J. A. (1857–)
Founder of American Society of Equity, 487–488
The third power, farmers to the front (1903), 487–488
"Every Farm an Experiment Station," 359
Ewbank, T. (1792–1870)
1849–1852. Comr. of Patents (Interior Dept.)
1849. Ann. rept.; discontinuance of estimates of crop production (1850), 174–175
Export Bounty, 13–18
Bill on export bounty, H. R. 2626, 54th Congress, intr. Dec. 23, 1895, originated by D. Lubin, 15
Emerick, C. F. Agric. staples, remedy for agric. depression. *In his* Analysis of agric. discontent (1897), 45–46
Lubin, D. Protection for agric. staples by an export bounty (1896), 16
Exports
See Foreign Trade
Extension Work
Bailey, L. H. Education by means of agric. (1909), 349
Extension Directors' Conference (1921), 448
Goddard, L. H. Farm management demonstrations, 1914 (1915), 378–379
Horticulture; repts. (1896), 78–79, 348
Smith, C. B. Origin of farm economics extension (1932), 377–378
What this meeting teaches in farm management demonstration, 1914 (1915), 379–380
Survey (The) in farm management extension, 376–383
AREA STUDIES
Illinois
Extension work in Ill., 1915–1917, under H. C. M. Case, 380
Farm Bureau — Farm Management Service; origin in 1925 and operation, 403
Goddard interview on Case method, 380–381
Kansas
State Agric. College Extension circulars. *See* Government Studies, U. S., State Level
Louisiana
Div. of Agric. Extension. Extension Circular 89. Pt. 1–5 (B. H. Critchfield, *et al.*). (1926), 466
New Jersey
State Agric. College. Extension Bulletin 1. Farm Labor (Agee and App). (1917), 883
New York State
Burritt, M. C. Farm management extension work in 1914 (1915), 377–378
Ohio
State Extension Service (Univ. of Ohio). Bulletins v. 18, No. 5. Labor required for crop production in Ohio (1922–1923), 402
Wisconsin
Donald, Mendum and Otis method; featuring financial records, 381
Eyerly, E. K.
Cooperative movements among farmers (1912), 570–571
Ezekiel, M. J. B. (1899–)
Assigned to price trends study in Div. of Statistical and Historical Research U. S. Dept. of Agric., 1923, 454
Factors affecting farmers' earnings in southeastern Penn. (1926), 373
Method of handling curvilinear correlation for any number of variables (1924), 457
, P. E. McNall and F. B. Morrison, Practices of . . . milk production on Wisc. dairy farms (1927), 141, 410–411
joint author. See Haas, G. C.; Tolley, H. R., 455, 456, 503–504

F

Fairchild, F. R. (1877–), and associates
Forest taxation in U. S. (1935), 865
Fairchild, G. T. (1838–1901)
1877–1879. Prof. English literature and librarian, Mich. Agric. College; course in political economy; comment by Bailey, 71
Influence on Bailey, 79
1879. President Kans. Agric. College, 71
Rural wealth and welfare (1900); review by M. B. Hammond (1901), 72
Fairway Farms Corporation of Mont.
Wilson, M. L. Fairway Farms Project (1926), 596
Falconer, J. I. (1888–)
1925. Chief Dept. of Economics, Ohio Agric. Exp. Sta. succeeding L. H. Goddard, 401–402
Agric. production in U. S. from 1840 to 1860. Thesis Univ. of Wisc. (1914), 304
Index numbers of production, wages and price (1925–1926), 889
Prices of Ohio farm products (1923), 499–500
joint author. See Bidwell, P. W., 304–310
Fankhanel, W. R.
joint author. See Hart, W. J., 703; Thomsen, F. L., 476
Farm Bloc (in Congress)
Capper, A. The agricultural bloc (1922), 506

Farm Finance and Agricultural Credit
Carver, T. N. How to use farm credit (1914), 927
Dowrie, G. W. Did deflation ruin the farmer and would inflation save him? (1925), 969–970
Drew, F. M. Farmer organization views. *In his* Present farmers' movement (1891), 905–907
Emerick, C. F. Analysis of agric. discontent in U. S. (1896), 907–908
Government loans to farmers (1899), 901–902
Garlock, F. L. Did deflation ruin the farmer and will inflation save him? Discussion (1925), 969–970
Gray, L. C. Accumulation of wealth by farmers (1923), 942–943
Holmes, G. K. Rural credit [rept. on first statistical survey by U. S. Dept. of Agric. on agric. credit conditions, 1912] (1913), 922–924
and J. S. Lord. Farms and homes: proprietorship and indebtedness in U. S. 11th U. S. census, 1890 (1896), 266, 267, 772–773, 916–919
Landis, B. Y. Social aspects of agric. credit (1927), 958–959
McMillan, H. G. Rural credits and how to finance the farmer (1916), 920
McVey, F. L. Farmer organization views. *In his* Populist movement (1896), 907
Olsen, N. A., *et al.* Farm credit, farm insurance, farm taxation, 1924 (1925), 944–946, 983, 1002
Peters, A. H. Economic advantages to farmer of eastern and western conditions. *In his* Depreciation of farming land (1889), 909
Resolutions in favor of rural credits adopted in 1912 national conventions by Republican, Democratic and Progressive parties, 920
Social Science Research Council. Bulletin No. 3. Research in agric. credit, scope and method (1931), 963–964
Sparks, E. S. History and theory of agric. credit in U. S. (1932), 899–902
Thompson, C. W. Factors affecting interest rates and other charges on short-term farm loans (1916), 926–927
How farmers may improve their personal credit (1915), 927–928
Statement at hearings before subcommittee of U. S. House Banking and Currency Committee on rural credits (1913), 924–925
Statement at hearings before U. S. Joint Committee on Rural Credits, 1915, 925
U. S. Banking and Currency Committee (House). Subcommittee hearings on rural credits, Dec., 1913; statement by C. W. Thompson, 924–925
Census Bureau. 11th U. S. census, 1890. Compendium, Pt. 3. Farms and homes: proprietorship and indebtedness (1896), 266, 267, 772–773, 918
Farm Credit Administration. Ann. rept. 1st., 1933 (1934), 974–975
Federal Land Banks. *See below* Banks and Banking.
Joint Commission of Agric. Inquiry. Rept. Pt. 2 67th Congress, House rept., 408 (1922), 947–949
Joint Committee on Rural Credits. Hearings, Nov. 1915; statements by Secy. of Agric. Houston and C. W. Thompson, 925
Legislation. Federal rural credit legislation summarized, 919–922
Thompson, C. W. Federal Farm Loan Act (1917), 919–921
How the Federal Farm Loan Act benefits the farmer (1917), 928
Valgren, V. N. and E. E. Engelbert. Credit association as an agency for rural short-time credit (1921), 938
Wall, N. J. Farm Finance, 897

Farm Finance and Agricultural Credit, classified
Banks and Banking
Country bank failures and farm credit, 968–974
Garlock, F. L. Long-term loans of Iowa banks (1930), 970–971
Hill, F. F. Analysis of loan operations of Federal Land Bank of Springfield, Mass. from its organization . . . 1917 to May 31, 1929 (1932), 964–966
Spread of "free banking," 902
Valgren, V. N. and E. E. Engelbert. Bank loans to farmers on personal and collateral security (1922), 940
Cattle Loans, 935
Cotton Industry
Bennett, R. L. All-cotton farming credit risk; preferential rates proposal, 1915, 937–938
Carsen, W. J. Financing production and distribution of cotton, 1923, 943–944
Labor Cost. *See* Farm Labor
Rowe, W. H. Agric. credit corporations affiliated with cotton cooperative marketing assns. (1932), 952–953
Livestock Industry
Larmer, F. M. Financing the livestock industry (1926), 935

Mortgage Transactions. *See* Mortgages
Seed Loans
Beginning of seed loans, 921–922
Wall, N. J. Federal seed-loan financing and its relation to agric. rehabilitation and land use (1936), 922
Tobacco Industry
U. S. Federal Reserve Bd. Bulletin v. 7. Tobacco finance (1921), 941–942
AREA STUDIES
Arkansas
Gile, B. M. Development of agric. credit corporations in Ark. with state aid in 1931 (1932), 951–952
Organization and management of agric. credit corporations in Ark. (1931), 951–952
and A. N. Moore. Farm Credit in a plantation and an upland cotton district in Ark. (1928), 957–958
Illinois
Ill. Bureau of Labor Statistics. Bienn. rept., 5th, 1888 (agric. credit data, 1870–1887), 910
Indiana
Dept. of Statistics and Geology. Ann. rept. 1st, 1879 (agric. credit data, 1873–1877). (1880), 909
Iowa. *See above* Banks and Banking
Massachusetts. *See above* Banks and Banking
Nebraska
Bureau of Labor and Industrial Statistics. Bienn. rept. 1st, 1887/8 (summary of agric. credit survey). (1888), 910–911
New York State
Assoc. for Improving Conditions of the Poor. Proposal for financial aid to farmers. *In its* Inquiry into causes of agric. depression in N. Y. State, 1894, 908
Spencer, L. Economic study of rural store credit in N. Y. (1924), 955
North Carolina
Yoder, F. R., H. S. Beardsley and A. J. Honeycutt. Farm credit in N. C.: survey of 800 farms (1923), 953–954
North Dakota
Jacobstein, M. Farm credit in a northwestern state (1913), 929–930
Willard, R. E. Farm credit survey of four townships, Foster Co. (1924), 956
Southern States
Hammond, M. B. *In his* Cotton industry, Pt. 1 (1897), 903–905
Pre-civil war financing of southern agric., 903–905
Texas
Ousley, C. Statement: Texas farming credit; one-crop farming cause of high credit price (1917), 937
Peteet, W. Farming credit in Texas (1917), 935–937
Farm Labor, 873–898
Agee, A. and F. App. Farm labor (1917), 883–884
Black, J. D., ed. Research in farm labor (1933), 894
Boss, A., F. W. Peck and T. P. Cooper. Labor requirements of livestock (1916), 415–419
Contributions and studies by state agencies, 883–890
Cooper, T. P., F. W. Peck and A. Boss. Labor requirements of crop production (1916), 415–420
Dodge, J. R. Rept. on Amer. farm labor. *In* U. S. Industrial Commission. Rept. (1901) v. 11, 877–880
Fairchild, G. T. Speculative labor. *In his* Rural wealth and welfare (1900), 73
Folsom, J. C. Relief from farm labor costs (1929), 894
Gregory, J. M. Applicability of division of labor to farm enterprises. *In his* New political economy (1882), 57
Hale, R. F. Estimating local market prices and farm labor since 1920 (1939), 485
Warren, G. F. Farm labor and seasonal farm labor. *In his* Farm management (1913), 411–412
and K. C. Livermore. Productive "man-work units" or "man-equivalent" idea developed in 1912, 364
Farm Labor, classified
Mexican Labor
Taylor, P. S. Mexican labor in U. S., 1928–1932 (1933), 890
Statistics
Number of wage workers on farms, 1910, 1920, 1930. U. S. 15th Census. Population, 1930, 882
Wages. *See* Wages of Farm Labor
AREA STUDIES
California
Adams, R. L. and T. R. Kelly. Study of farm labor in Calif. (1918), 889
Taylor, P. S. Mexican labor in Imperial Valley. *In his* Mexican labor in U. S., 890
Colorado
Taylor, P. S. Mexican labor in valley of the South Platte in Colo. *In his* Mexican labor in U. S., 890

Farm Labor (*cont.*)
AREA STUDIES
Cotton Belt
Phillips, U. B. Economic cost of slaveholding in the Cotton Belt (1905), 313
Massachusetts
Folsom, J. C. Farm labor in Mass., 1921 (1924), 891–892
New Jersey
Folsom, J. C. Truck-farm labor in N. J., 1922 (1925), 892–894
New York State
Gillett, R. L. A study of farm labor in Seneca Co., N. Y. (1924), 885
Ladd, C. E. Farm labor. *In his* Cost accounts on some N. Y. farms, 1912–1913 (1916), 412–415
Ohio
Goddard, L. H. and W. L. Elser. Labor cost of producing corn in Ohio (1913), 400–402
Taber, R. F. and C. R. Arnold. Labor required for crop production in Ohio (1922–1923), 402
Texas
Taylor, P. S., Mexican labor in Dimmit Co., Tex. *In his* Mexican labor in U. S., 1928–1932, 890
Wheat Belt
Lescohier, D. D. Conditions affecting demand for harvest labor in the Wheat Belt (1924), 896
Harvest labor problems in the Wheat Belt (1922), 895–896
Wisconsin
Taylor, H. C. and J. D. Black. Farm labor in Wisc. (1920), 886
Farm Management Research
Card, F. W. Farm management (1907), 110
Conference of Research Workers in Field of Farm Management and Cost of Production; Chicago, 1923. Participants; repts. of committees 1 and 2, 428–432
Elliott, F. F. Types of farming in U. S. 15th U. S. Census, 1930 (1933), 111
Farm management and uses of census data, 264–265
Forster, G. W. Letter to H. C. Taylor, 1946; capacity and efficiency theory of Taylor, 439
Planning the farm business (1931), 440
Hamer, O. S. Master farmers of America (1930), 161
Hays, W. M., *et al.* Farm management research and teaching (1912), 76–77, 395–397
Holmes, C. L. Agric. entrepreneurship (1932), 161
Economics of farm organization and management (1928), 153, 159
Mosher, M. L. and H. C. M. Case. Farm practices and their effects on farm earnings (1938), 403
Peck, F. W. Methods of conducting cost of production and farm organization studies (1921), 427–428
Social Science Research Council. Rept. No. 13. Research in farm management (1932), 161
Spillman, W. J. Study of farm practice vs. field experiments, 1912, 368
Taylor, H. C. Cost accounting method of studying farm management problems (1911), 404–407
Farm management. Pt. 1. *In his* Syllabus of lectures on agric. economics (1903), 81
Terminology controversy of 1910/11; confusing farm management and rural economy, 80–98
Warren, G. F. Farm management (1913), 97, 111, 119–120, 135, 137, 147–150, 411–412, 808
Relation of farm management and marketing to economics (1922), 669
Some important factors in general farming and in dairy farming (1914), 363
and F. A. Pearson. The agric. situation (1924), 494
Work started in U.S.D.A., 81, 605
Farm Management Research, classified
Associations. *See* Amer. Farm Management Assoc.; Amer. Farm Economic Assoc.; Assoc. of Agric. Economists; Assoc. of Amer. Agric. Colleges and Exp. Stas.
Budgeting Method
Hunter, B. and P. Eke. Budgeting. *In their* Method of determining what to produce (1932), 467–468
Hutson, J. B. Farm budgeting (1928), 441
Progress . . . of budgeting method in planning agric. economics (1930), 441
"Keystone of the arch of which cost estimating and price forecasting became the supporting pillars," 451
Labor income; initiated by T. F. Hunt, 358
Pioneer of idea of farm budgeting in U. S. was Pond and Tapp Study of farm organization in S. W. Minn. (1923), 442
Pond, G. A. Letter to H. C. Taylor; budgeting approach, 439
Choice of Farm, 101–111
Card, F. W., 110
Elliott, F. F., 111
Hunt, T. F., 104–110
Taylor, H. C., 101–104
Thomson, E. H., 111

Warren, G. F., 111
Choice of Farm Enterprises, 112–121
Brewer, W. H., 113–115
Carver, T. N., 119
Taylor, H. C., 115–118
Walker, F. A., 112–113
Warren, G. F., 119–120
Cost Accounting. *See* Cost Accounting
Fruit Farms. *See* Fruit Industry
Hog Farms. *See* Hog Marketing Research; Hog prices.
Home Market Adjustment to local production adjustment studies, 459–467
Human Factor Studies
Hamer, O. S., 161
Higbie, E. C., 159–161
Wilcox, W. W., A. Boss and G. A. Pond (1932), 161–164
and O. G. Lloyd (Indiana). (1932), 161
Input–Output Studies
Seminar of 1922 conducted by J. D. Black, 442
Terminology; input requirements and variations, 138
Tolley, H. R., *et al.* Input as related to output in farm organization and cost of production studies (1924), 138–140
"Intentions to Plant" Project. *See below* Outlook approach, 449, 453
Labor. *See* Farm Labor
Methods of analysis
Bean, L. H. Applications of a graphic method of multiple curvilinear correlation (1929), 457
Farmers' response to price (1929), 458
Simplified method of graphic curvilinear correlation (1929). (1930), 457
Census data uses, 264–265
Cornell Univ., Statistical Type of farm management survey developed by, 384–385
Ezekiel, M. J. B. Method of handling curvilinear correlation for any number of variables (1924), 457
Grimes, W. E. Rept. on research work in farm management (1927), 375
Social Science Research Council. Preliminary rept. of a survey of economic research in agric. . . . 1926–1927 (1927), 375
Tolley, H. R. and M. J. B. Ezekiel. Method of handling multiple correlation problems (1923), 456
U. S. Dept. of Agric. Summaries of farm business records from 435 localities in 45 states, 1907–1924. *In its* Yearbook, 1925 (1926), 375
Warren, S. W. Multiple correlation analysis (1932), 375
Outlook Approach: "Intentions to Plant," 449, 453
Opposition of cotton merchants and speculators (1924), 453–456
Outlook Approach: Price Outlook Project, 454–456
Outlook Approach, Production Adjustments, 447–479
Agric. Outlook Conference, 1923; proceedings (1923), participants, 449–451
Appraisal of outlook studies, 477–479
Bureau of Agric. Economics outlook service initiated in 1923, 490
Representatives sent abroad for observation to improve service, 476–477
Summary of agric. statistics for Outlook Conference of 1923, 450
President of U. S. (Coolidge). Quoted on outlook, 1924, 452
Tolley, H. R. History and objectives of outlook work (1931), 453
Price Studies. *See* Prices of Farm Products
Production Factors. Variation of, 154–164
Outlook Approach, 447–479
Size of Farm, 143–153
Static vs. Dynamic Management
Depression of 1920 signal for renewed studies, 447
Taylor, H. C. Adjustment of farm business to declining price levels (1921), 447
Adjustments . . . to meet the marketing situation; address (1921), 448–449

HOME MARKET AREA STUDIES

Connecticut
Davis, I. G. and F. V. Waugh. Conn. market demand for vegetables (1926), 464–465
Illinois
Mumford, H. W., *et al.* Developmental study for a rural-urban trade area (1929), 466
Louisiana
Critchfield, B. H., *et al.* Agric. situation in the Shreveport trade area (1926), 466
Michigan
Scholl, C. A. and W. O. Hedrick. Lansing food survey (1930), 466
Pennsylvania
Dunlap, R. B., *et al.* Adjusting production to meet home market demands in Blair Co. (1924), 459, 461

Farm Management (*cont.*)
South Carolina
Robinson, F. H. and W. C. Jensen. Agric. production, consumption and marketing study in Greenville trade area (1927), 465–466
Virginia
Vernon, J. J., *et al.* Adjustment of agric. production to meet home market demands in Clifton Forge-Covington trade area (1929), 466
and H. I. Richards. Agric. situation in Roanoke and its trade territory (1925), 466
West Virginia
Armentrout, W. W. Adjusting agric. production . . . in the Beckley area to meet home market demands (1930), 461
Adjusting . . . in the Clarksburg area (1926), 461
Adjusting . . . in the Wheeling area (1930), 461
et al. Adjusting . . . in south central W. Va. (1924), 460

SURVEYS

Surveys: American Areas
Appraisal of survey methods, 384–387
Bailey, L. H. and T. F. Hunt set stage for G. F. Warren and Cornell method of studying farm management, 1903, 63
Agric. survey. *In his* The harvest (1927), 150, 382–383, 408
The survey idea in coutry-life work (1913), 349–350, 358–359
Baily, F. Journal of a tour in unsettled parts of North America. London (1856), 286
Cornell Univ. Agric. Exp. Sta. Ann. rept. for 1912 mentions "Studies of successful farms found by survey work" (1913), 365
Eliot, J. Interest in agric. surveys, 338–339
Office of Farm Management (Dept. of Agric.) Farm management surveys, 1907–1924, 366–375
Summary, 337–387
Warren, G. F. Agric. surveys, 358–366
Types, British and American surveys prior to 1908, Country Life Commission, Cornell Type, etc., 326–387

SURVEY AREA STUDIES

British Areas
British agric. survey experience and summary, 327–337, 386
Marshall, W. Rural economy of Norfolk . . . management of landed estates and practice of husbandry. . . . (1787), 330–331
Prothero, R. E. English farming past and present (1912), 332
Tull, J. New horse-houghing husbandry (1731), 338
Young, A. Farmers' tour through the east of England, 327–330
Six months tour through the north of England (1770), 327–328
Six weeks tour through southern counties of England, and Wales. ed. 2 (1769), 327, 328
United States
California
California experience in agric. adjustment, 469–470
Economic problems of Calif. agric. Rept. for the Governor by agric. economics staff of Calif. Agric. Exp. Sta. (1930), 474–475
Connecticut
Davis, I. G. and C. I. Hendrickson. Soil type as a factor in farm economy. I. Town of Lebanon, 1922–1923 (1926), 375–376
Idaho
Severance, G., B. Hunter and P. Eke. Farming systems for eastern Wash. and northern Idaho (1930), 467
Illinois, Indiana, and Iowa
Farm Bureau — Farm Management Service; origin in 1925; operation and leaders, 403
Farm management demonstrator, 1915–1917, H. C. M. Case, 380
Overton, M. H. Increasing farm profits with more early potatoes in Ind. (1926), 462
What is happening to agric. in northwestern Ind.? (1928), 462
and P. K. Edwards. Production and marketing of farm products in Wayne Co. (1925), 461
Robertson, L. Changes in farming in Lake and Porter Cos., Ind., as a result of nearness to industrial cities (1932), 463–464
Thomson, E. H. and H. M. Dixon. Farm management survey of three representative areas in Ind., Ill. and Iowa (1914), 366–367, 808–811
Wilcox, W. W. and O. G. Lloyd. Study of human factor in management of Ind. farms (1932), 161
Kansas
Grimes, W. E., *et al.* Study of farm organization in central Kansas (1925), 121, 437

Kentucky
Hutson, J. B. *See above* Budgeting Method, 440–441
Minnesota
Pond, G. A. and J. W. Tapp. Study of farm organization in southwestern Minn. (1923), (1924), 121, 320, 433–437, 442
G. A. Sallee and C. W. Crickman. Planning systems of farming for the Red River Valley, Minn. (1931), 439
New England
Eliot, J. Essays upon field husbandry in New England . . . 1748–1762 (1934), 338–339
New Hampshire
Robertson, F. E. and L. G. Dodge. Some profitable and unprofitable farms in N. H. (1913), 367
Thomson, E. H. Agric. surveys of four townships in southern N. H. (1911), 366
New York State
La Mont, T. E. Costs and returns in producing apples in . . . Niagara Co., 1926–1928 (1933), 359
Scoville, G. P. Chemung Co. farm management survey, 1912, 376–377
Warren, G. F. and K. C. Livermore. Agric. survey — townships of Ithaca etc. Tompkins Co. (1911), 357, 360, 362, 365
Warren, S. W. Economic study of northern Livermore Co. (1932), 364, 365
North Carolina
Forster, G. W., R. J. Saville and J. B. Hutson. Profitable farm organization for the coastal plain of N. C. (1926), 438–439
Pennsylvania
Berger, A. C., *et al.* Agric. production and marketing in Lebanon Co. (1925), 460
Ezekiel, M. J. B. Factors affecting farmers' earnings in southeastern Penn. (1926), 373–374
Spillman, W. J., H. M. Dixon and G. A. Billings. Farm management practice of Chester Co. (1916), 151–152, 319–320, 368–369, 374
South Carolina
Ruffin, E. Commencement and progress of agric. survey of S. C. for 1843 (1843), 342–345
Southern States
Olmsted, F. L. Works, 345–346
Vermont
Commission on Country Life. Rural Vermont — a program for the future (1931), 383–384
Washington
Severance, G., B. Hunter and P. Eke. Farming systems for eastern Wash. and northern Idaho (1930), 467
Wisconsin
Schafer, J. Four Wisc. counties [Kenosha, Racine, Milwaukee and Ozaukee] (1927), 294–295

Farm Ownership and Tenancy, 769–829
Agricultural ladder, 820–826, 850
Benton, A. H. Farm tenancy and leases (1918), 813–814
Black, J. D. Division of farm income between landlord and tenant, 1919 (1920), 814–817
Cornell Univ. Field studies in land tenure, 807–808
Discussion of land tenure in the Amer. agric. press, reviewed, 787–804
Ely, R. T. and C. J. Galpin. Tenancy in an ideal system of land ownership (1919), 824–826
Galpin, C. J. New light on the retired farmer (1919), 826
Gray, L. C., *et al.* Ownership and tenancy, 850–852
Henderson, B. Buying a farm in an undeveloped region (1924), 865–866
Hibbard, B. H. Farm tenancy in U. S. (1912), 819
Tenancy in the north central states (1911), 817–819
King, D. B. American landlordism (1886), 772
Shu-Ching, Lee. Theory of the agric. ladder (1947), 820
Spillman, W. J. The agric. ladder (1919), 822–824
Work of Office of Farm Management relating to land classification and tenure, 1917 (1918), 822, 861–862
and E. A. Goldenweiser. Farm tenancy in the U. S., 1916 (1917), 822
Taylor, H. C. Farm proprietorship in U. S., 1898, unpubd. ms., 156, 770
Lectures on land tenure, 1917, 820
Tenancy and farm ownership, 1898, 771–780, 820
Walker, F. A. Statistical study of tenancy initiated by Walker when Director of the U. S. Census in 1880, 769
Wehrwein, G. S. Place of tenancy in a system of farm land tenure (1925), 828–829

Farm Ownership and Tenancy (*cont.*)
Western Economic Assoc. Efforts to secure legislation for collection of information on farm and home ownership and tenancy (Act of Feb. 22, 1890), 266
Willcox, W. F. Land tenure material from census data of 1880, 1890, presented at Amer. Economic Assoc. meeting of 1896, 43

AREA STUDIES

Great Britain
Relations of landlords and tenants in Great Britain, 782–786
Taylor, H. C. Decline of landowning farmers in England (1904), 289, 351, 780–782
United States. *See also* Land Economics Research, 769–870
Illinois
Kuhlman, G. W. Study of tenancy in central Ill. (1927), 829
Thomson, E. H. and H. M. Dixon. *In their* Farm management survey of three representative areas in Ind., Ill. and Iowa (1914), 808–811
Indiana
Thomson, E. H. and H. M. Dixon. *See above* Illinois, 366–367, 808–811
Iowa
Lloyd, O. G. Farm leases in Iowa (1915), 811–812
Thomson, E. H. and H. M. Dixon. *See above* Illinois, 366–367, 808–811
Southern States
Plantations in the South; tenure statistics in greater detail than before in 13th U. S. Census, 1910. Agriculture (1913), 272, 274
Wisconsin
Galpin, C. J. and E. F. Hoag. Farm tenancy; analysis of occupancy of 500 Wisc. farms (1919), 826–828
Taylor, H. C. Methods of renting farm lands in Wisc. (1910), 302, 804–807

Farm Population
See Population, 275–276

Farmers' Alliances
Hicks, J. D. *in his* Populist revolt, 1889–1892 (1931), 5
National Farmers' Alliance and Industrial Union, 4–8
Operations, 1889–1892, 4–8

Farmers' Bulletins
See Government Studies. U. S. Federal Level, Dept. of Agric.

Farmers' Grain Dealers Assoc. of Iowa
Holman, R. A. Romance of . . . Assoc. (1946), 678

Farmers' Movement
Amer. Economic Assoc. meetings, 1892. Session "Farmers' Movement;" expressions of economists, 32–35
1896 "Is there a distinct agric. question?", 39–45
Canfield, J. H. Letter; disaffection of rural community with administration of public affairs; Populist Movement (1894), 36
Johnson, E. R. Rail transportation and Farmers' Movement; address. 1896, 41
Laughlin, J. L. Causes of agric. unrest; address (1896), 37–39
Sumner, W. G. Cause and cure of hard times (1896), 37
Walker, C. S. Farmer's pecuniary condition; statement at Amer. Econ. Assoc. meeting (1892), 32–33

Farmers' Organizations
See also Associations listed under Farm Management Research
Buck, S. J. Agric. crusade (1921), 977
Coulter, J. L. Organization among the farmers of U. S. (1909), 977
Early farm organization views on taxation, 993–994
National Agric. Organization Socy.; functions and origin, 562
National Grange. *See that title*, 8–12
Riley, M. Help given by him to farmers to organize, 562
Wiest, E. Agric. organization in U. S. (1923), 977

Farnam, H. W.
Chm. of Dept. Econ. & Soc. of Carnegie Inst. D. C. and chm. of Bd. of Research Associates in Amer. Econ. Hist., 302

Federal Council of Churches of Christ in America
Research Dept. Social Aspects of Agric. Credit (Landis). (1927), 958–959

Federal Farm Board, 600

Federal Farm Loan Act, July 17, 1916
Thompson, C. W. Federal Farm Loan Act (1917), 919–921

Federal Intermediate Credit System
Benner, C. L. Federal Intermediate Credit System (1926), 950
Operation of banks, 947–953
Valgren, V. N. Agric. Credit Act of 1923 (1923), 949–950

Federal Land Banks
See Banks and Banking

Fertilizer
Warren, G. F. Intensity of culture. *In his* Farm management (1913), 135–137

Fetter, F. A. (1863–)
Course in economics of agric., 1895. Cornell Univ. Dept. of Political Sciences, 75

Relation between rent and interest. Amer. Econ. Assoc. Proceedings, 1903; publications, 103, 858
Fippen, E. O. (1879–)
Dean Thomas F. Hunt: an estimate, 61
Fitz, L. A. and J. L. Coulter
Fitz-Coulter grading plan; summary, 609–610, 611
Fitzpatrick, J. C. (1876–1940)
Ed., 122
Fletcher, I. (1784–1842)
Letter, as chm. House Committee on Patents, to Comr. of Patents, Ellsworth, Jan. 21, 1839; proposal for agric. statistics, 170
Flint, C. L. (1824–1889)
A hundred years' progress, U. S. D. A. rept., 1872 (1874), 282–284
Flour Milling
Neftel, K. Rept. on flour-milling processes. 10th U. S. Census, 1880. Agriculture (1883), 263
Foley, E. A. (1881–)
U. S. Agric. Comr. at London, 632
Folsom, J. C. (1888–)
Farm labor in Mass. 1921 (1924), 891–892
Relief from farm labor costs (1929), 894
Truck-farm labor in N. J. 1922 (1925), 892–894
Folwell, W. W. (1833–1929)
Agric. problems; solution, 1896, 44
Farmers' Movement; comment, 1892, 34
Foord, J. A. (1872–)
Amer. Farm Management Assoc.; organization; participant, 1910, 84
Committee on reorganization, Office of Farm Management, 422
Teacher Mass. Agric. College; subject farm management, 1908, 81
Forbes, R. D.
joint author. See Critchfield, B. H., 466
Forecasting
Outlook approach. *See* Farm Management Research, 447–479
Foreign Trade
Brand, C. J. Vital concern of agric. in foreign trade (1919), 571
Dodge, J. R. Production and distribution of principal agric. products of the world, 1881–1890 (1893), 510–511
Experimental shipments of butter to London. 1897 (1898), 514
Exports of farm and forest products, 1901–1903 (1905), 525
Holmes, G. K. Meat supply and surplus (1907), 525
Nation's farm surplus. 1903 (1904), 524
Imports of farm and forest products, 1901–1903 (1905), 525
Peters, E. T. Recent features of our foreign trade (1894), 512
Rutter, F. R. The international sugar situation (1904), 525
Foreign Trade, classified
U. S. Foreign Market Division (Dept. of Agric.), 524–526
Chief of Div., G. K. Holmes, 524–526
Name of Div. changed to Production and Distribution Div. in 1908, 526
Foreign Market Section (1894–1902) Dept. of Agric., 512–516
Chief of Div., 1897–1903, F. H. Hitchcock, 514, 516
Efforts of section to extend markets in foreign countries, 514–516
Organization; object, 512–513
Production and Distribution Div. (1908) Succeeded Foreign Market Div., 526
Statistics Div. (Dept. of Agric.) Miscellaneous ser. Rept. 5, 1893. Dodge rept. *See above* Dodge, J. R., 510–511
Ward, E. G., jr. Methods and routes for exporting farm products (1904), 525
Forestry Economics
Calkins, M. C. The Clarke Forestry Law (1925), 863
Fairchild, F. R., and associates. Forest taxation in U. S. (1935), 865
Fernow, B. E. Course in forestry economics given in 1896 at Univ. of Wisc.; first such course on this continent or in England, 858
Gray, L. C., *et al.* Utilization of our lands for crops, pasture and forest. 1923 (1924), 852, 862–863
Ise, J., U. S. forest policy (1920), 857
New York State Reforestation Commission. Rept. (1932), 865
Origin and development of interest in forestry economics in U. S., 858–859
U. S. Congress. Committee on Agric. (House) Hearings on reforestation. March, 1924, 863
Forster, G. W. (1887–)
Acting in charge of Office of Farm Management and Farm Econ. July 1, 1921 – June 30, 1922, 604
Letter to H. C. Taylor; capacity and efficiency theory of Taylor's, 1946, 439
Planning the farm business (1931), 440
and R. J. Saville. Profitable farm combinations (1927), 440
, R. J. Saville and J. B. Hutson. Profitable farm organizations for the coastal plain of N. C. (1926), 438–439

Forster, G. W. (*cont.*)
et al. Farm income and taxation in North Carolina (1929), 1015–1016
Foster, L. G.
Business study of Ohio Poultry Producers' Cooperative Assoc. (1928), 664–665
Economic aspects of Ohio farmers' elevators (1927), 663
Some factors affecting movement of Ohio wheat (1930), 757
joint author. See Hibbard, B. H., 659
Foster, W. T. (1879–)
Outlook conference, 1923, 449
Fox, G. A.
Taxation of farm lands, 997
Frame, N. T. (1877–)
Marketing outlook, 460
Franklin, B. (1706–1790)
Crop insurance plan, 983–984
Fraser, W. J. (1869–)
City milk supply (1903), 547
Frear, J. A.
Wisc. State Board of Public affairs, 551
Freight Rates
Johnson, E. R. Proposal for state regulation at 1896 meeting of Amer. Econ. Assoc., 41–42
Lubin, D. Reduced rates for shipping Calif. fruit to eastern markets, 13
Peffer, W. A. Discriminatory rates. *In his* Agric. depression, 1894 (1895), 21
French, E. L.
Regarding grain standards, 607
Fruit and Vegetable Inspection in B.A.E., 636–640
Fruit Industry
See names of fruits, as apples, apricots, cantaloupes, cherries, grapes, pears, etc.
Fruit Marketing Research
Factors influencing keeping qualities of fruit in transit (1930), 743
Inspection service, 636–640
Lloyd, J. W. and H. M. Newell. Causes of damage to fruits and vegetables during shipment (1932), 743
Market News Service operation, 633–636
Sherman, W. A. Merchandising fruits and vegetables (1928), 638
Standardization of containers
Fruit and vegetable; compulsory law execution by Dept. of Agric., 637
Stokdyk, E. A. and G. M. Reed. Standard packs, packages and grades for Kans. fruits and vegetables (1926), 726
AREA STUDIES
Orient
Crocheron, B. H. and W. J. Norton. Fruit markets in eastern Asia (1930), 469, 753
Overholser, E. L. Study of shipment of fresh fruits and vegetables to Far East (1930), 753
United States
California
Commission houses, 13
Relation to idea of international institute of agric.; statement of F. Adams, 1941, 687
Situation during 1920–1928, 469
Illinois
Lloyd, J. W. and H. M. Newell. Observation on refrigeration of some Ill. fruits in transit (1929), 743
Kansas
Stokdyk, E. A. and G. M. Reed. Standard packs . . . for Kans. fruits and vegetables (1926), 726
Michigan
Motts, G. N. Motor Truck marketing of Mich. fruits and vegetables (1932), 747
New York State
Corbett, R. B. Economic study . . . operations of fruit and vegetable shippers in western N. Y. (1926), 734
Economic Study . . . of fruit marketing in western N. Y. (1928), 669–670
Fruit Production Estimates
Modified par system, 245
"Fulmer Act," March 4, 1923
See Cotton Standards Act, 619, 621, 622, 623, 628
Fulmer, H. P. (1875–1944). (Congressman)
Sponsored Fulmer Act (1923), 619
Futures Trading
George, J. Z. Effect on prices. *In his* Condition of cotton growers in U. S. (1895), 27
Hedging defined, 505
Legitimacy recognized; govt. regulation, 505
Peffer, W. A. Suppression of futures trading. *In his* Agric. depression 1894 (1895), 25
Futures Trading, classified
Corn Futures
Hoffman, G. W. Trading in corn futures (1930), 504–505
Cotton Futures
Administration of Cotton Futures Act reviewed, 614–618
Wheat Futures
Duvel, J. W. T. and G. W. Hoffman. Major transactions in the 1928 Dec. wheat future (1928), 504
Speculative transactions in the 1926 May wheat future (1927), 504

Peffer, W. A. Wheat price. *In his* Agric. depression, 1894, 22

G

Gabbard, L. P. (1888–)
Agric. economic survey of Rockwall Co., Tex. (1925), 758–760
joint author. See Crawford, G. L., 761
Galloway, B. T. (1863–1938)
Marketing work plans, conference, 537–538
Mentioned, 230–231
Galpin, C. J. (1864–1947)
New light on the retired farmer (1919), 826
and E. F. Hoag. Farm tenancy; analysis of occupancy of 500 Wisconsin farms (1919), 826–828, 864
and V. B. Larson. Farm population of selected counties (1924), 275
joint author. See Ely, R. T., 824
Gannett, Henry (1846–1914)
joint author. See Hewes, F. W., 315
Gardner, F. D. (1864–)
Participant in organization of Amer. Farm Management Assoc. in 1910, 84
Position in controversy of 1910/11 concerning "farm management" and "rural economics," 91, 93
Gardner, K. B.
Margins, expenses and profits in retailing meat (1926), 713
Garfield, J. R.
Committee on Dept. Methods, 220
Garlock, F. L.
Country banking in Wisconsin during the depression (1941), 972–974
Did deflation ruin the farmer and would inflation save him? Discussed (1925), 969–970
Long term loans of Iowa banks (1930), 970–971
and B. M. Gile. Bank failures in Arkansas (1935), 971–972
joint author. See Murray, W. G., 960–961
Gaston, H. P.
Consumer demand for apples in Michigan (1931), 745
Gaston, T. L.
Hog prices and hog enterprise on Idaho farms (1932), 467
Gates, P. W. (1901–)
The homestead law (1936), 859
Gatlin, G. O. (1888–)
Cooperative marketing of cotton (1926), 646
Gay, E. F. (1867–)
Mentioned, 313
Gaylord, F. C. (1889–)
Indiana peaches (1927), 639
and H. M. Cleaver. Buying tomatoes on grade, 1928 (1929), 639
Grading tomatoes for quality (1927), 639
Indianapolis apple market: 1929–30 crop (1931), 753
Marketing Indiana potatoes (1932), 640
and J. H. McGillivray. Buying tomatoes on grade (1930), 639
Gaylord, W. (1792–1844)
Ed. of the Cultivator, 1840, 259
Geographic Factors, 277–325
Area Studies. *See* subgroups entitled *Area Studies* under many main subject groups, Farm Management Research, for example. References are made from main area groups, as Corn Belt, for instance, as well as from names of states.
Schmidt, L. B. Regional economic history. *In his* Economic history of Amer. agric. (1916), 281–282
Taylor, H. C. Geographic factors. *In his* Place of economics in agric. education and research (1911), 279–280
George, H. (1839–1897)
American landlordism (1886), 267, 772
Progress and poverty (1879), 41, 80, 857
George, J. Z. (1826–1897)
Condition of cotton growers in the U. S. Senate rept. 986, 53 Congress (1895), 19, 26–29
Georgia
Brooks, R. P. Agrarian revolution in Georgia, 1865–1912 (1914), 299–302
Cost of cotton grown in Ga.; 1920 records, 423
Leigh, F. B. Ten years on a Ga. plantation since the war (1883), 300
Gephart, W. F. (1877–)
Grading and standardization in marketing foods (1919), 571
Germany
Beet sugar industry, 115–117
Plant feeding and diminishing returns; work in, 141
Giddings, F. H. (1855–1931)
Farmers' Movement (1892), 35
Gilbert, C. W. (1892–)
Took training with Scoville, 378
Gile, B. M.
Development of agric. credit corporations in Ark. with state aid in 1931 (1932), 952
Organization and management of agric. credit corporations in Ark. (1931), 951–952
and A. N. Moore. Farm credit in a plantation and an upland cotton district in Ark. (1928), 957–958
joint author. See Garlock, F. L., 971–972
Gillett, R. L. (1891–)
Statistics relative to Dairy Industry, 251

Gillett, R. L. (*cont.*)
Study of farm labor in Seneca Co., N. Y. (1924), 885–886
Goddard, L. H. (1868–1944)
Farm management demonstrations, 378–379, 380–381, 400–401
and W. L. Elser. Labor cost of producing corn in Ohio (1913), 400–401
Goethe, J. W. (1749–1832)
Mentioned, 67
Goldenweiser, E. A. (1883–)
Rural population (1919), 316
joint author. See Spillman, W. J., 822
Gompers, S. (1850–1924)
Mentioned, 18
Gould, H. F.
joint author. See Shear, S. W., 471–472
Government Policies. U. S. Federal Level
Agric. depressions. W. A. Coutts *in his* Agric. depression (1897), 46–49
Commodity loans on durable farm products in storage, 3, 6–8
Crop reporting service, 4
Peffer, W. A. *In his* Agric. depression, 1894, 25
Flexible currency, 3
Freight rates control, 3
Farmers' Alliance resolutions, 1889, 1891, 5–6
Future trading regulation
Farmers' Alliance votes 1889, 1890, 3, 6
Income tax. Farmers' Alliance demand, 3, 5
Inflation of currency, 3
Land settlement; Farmers' Alliance resolution, 1890, 5–6
Measures proposed in the 1890's, 3-6
Meat packing industry regulation, 3
Price fixing. Taylor, H. C. *In his* Farm economist in Washington, 1925, 497–499
Sub-treasury plan. Noblin, S. *In his* L. L. Polk, agrarian crusader (1949), 6
Skinner, H. *In his* Hope of the South, 1889 [first suggestion for sub-treasury plan], 6
Tariff removal from necessities of life. Farmers' Alliance demand, 5
Treasury Dept. policy influenced by money power. Peffer, W. A. *In his* Agric. depression, 1894, 21
Government Policies. U. S. Federal Level, classified
Congress Legislation
Agric. Credit Act, 1923. Valgren, V. N. *In his* Agric. Credit Act of 1923 (1923), 949–950
Agriculture, Act to promote. June 18, 1888 (each consular officer to rept. to State Dept. on condition of agric. in his particular district), 192
Agric. Dept. created by Act of May 15, 1862, 179
Appropriation Acts, Dept. of Agric., fiscal years, 1913–1915, 1917–1918, 526–527, 533, 542, 545, 546
Carey Act. Aug. 18, 1894, 859
Clarke-McNary Act, 1924 (Reforestation), 853, 863
Calkins, M. C. Clarke Forestry Law, 1925, 863
Cotton Futures Act. Aug. 18, 1914, 615
Administration of, 614–618
Appraisal by Secy. of Agric. Houston. *In his* Ann. rept. 1914, 615–616
Cotton "Intentions to Plant" repts. prohibited. May 3, 1924, 242, 243
Cotton Price Forecasting Prohibition Act, 456
Cotton Standards Act, March 4, 1923 ("Fulmer Act"), 619
Universal standards for Amer. cotton, 618–633
Desert Land Act. 1877, 859
Dingley Tariff Bill. 1897; Cannon amendment (export bounty), 18
Export Bounty Bill. Intr. Dec. 23, 1895, 15–16
Federal Farm Loan Act. July 17, 1916
Thompson, C. W. Federal Farm Loan Act (1917), 919–921
General Mineral Land Leasing Act. Feb. 25, 1920, 859
Grain Futures Act. Sept. 21, 1922, 616
Grain Standards Act. Aug. 11, 1916, 545, 606–614
Industrial Commission Act. June 18, 1898, 516–517
Kinkaid Act. April 28, 1904, 859
Purnell Bill. Feb. 24, 1925.
History of Bill (Hills and Allen) 1926, 601
Reclamation Act. June 17, 1902, 859
Revision Act, 1891, 859
Stock-raising Homestead Act. Dec. 29, 1916, 859
Warehouse Act. Aug. 11, 1916, 545
Weeks Act, 1911 (Watershed protection), 853
Reports and Hearings
25th Congress, 1837–1839
House Committee on Patents. Letter, Jan. 21, 1839; proposal for agric. statistics, 170
51st Congress. 1889–1891
Senate Committee on Agric. and Forestry. Hearings; L. L. Polk address (1890), 4
52d–54th Congress. 1892–1895
Congressional investigations and repts., 19–29

53d Congress. 1893–1895
Rept. 787. Agric. depression "Peffer Rept." 1894, (1895), 19–25
Senate Committee on Agric. and Forestry. Rept. 986. Condition of cotton growers in the South, "George Rept." (1895), 26–29
59th Congress. 1905–1907
House Committee on Agric. hearings, 1905, 219
Keep Commission rept. Senate doc. 464, 1906, 220–225
61st–63d Congress. 1909–1915
Interest in proposals for creation of a Bureau of Markets; legislation, repts. and hearings reviewed, 1910–1913, 526–534
63d Congress. 1913–1915
House Banking and Currency Committee. Subcommittee hearings on rural credits. Dec., 1913; statement by C. W. Thompson, 924–925
Joint Committee on Rural Credits. Hearings. Nov., 1915; statements by Secy. Agric. Houston and C. W. Thompson, 925
67th Congress. 9121–1923
Capper, A. Farm bloc in Congress in the 1920's. *In his* The agric. bloc, 1922, 506
House Committee on Agric. Hearings on grades for spring wheat, 1922, 608–610
Joint Commission of Agric. Inquiry. Rept. Part 1–4. 1921–1922. House rept., 408
Pt. 2. Credit (1921–1922), 947–949
Pt. 4. Marketing and Distribution (1922), 571–576
National Agric. Conference, 1922. Rept. of proceedings (1922), 576–590
Taylor, H. C. Story of organization. *In his* Farm economist in Washington, 1919–1925, 577
68th Congress. 1923–1925
House Committee on Agric. Hearings on reforestation. March, 1924, 863
69th Congress. 1925–1927
House Committee on Irrigation and Reclamation. Hearings 1926, 863

Government Policies. U. S. State Level
Minnesota. Legislation
Law enacted April 19, 1913, requiring Dept. of Agric., Univ. of Minn., to collect information on farmers' cooperatives, 653

Government Studies: Great Britain
Royal Commission on Agric. 1879. Preliminary rept., 1881, 389
Royal Commissions on Agric. 1879 and 1893, 335–336

Government Studies: United States Federal Level
Agricultural Commissioner's Office. 1838–1861. This Office operated at intervals during this time, in the Patent Office, first under the State Dept., then under the Interior Dept. *See below* Patent Office, 170–176
Agriculture, Dept. of, May, 15, 1862–, 179
Agricultural Conference March 27, 1913, on work of Bureaus on Marketing and Distribution of Farm Products. Typewritten rept., 1913, 535–540
April 29, 1913, on organization and conduct of a market service in the Dept. of Agric. (1913), 540–541
Feb. 13, 1922, on Price Ratios. Typewritten stenographic rept., 583–590
Agric. Finance Review
(1938) Trend and present status of rural tax delinquency (Jackson), 1018–1019
(1939) Tax preference for homesteads (Isaac), 1017
Cooperation with Post Office Dept. in arranging collection of livestock statistics by rural mail carriers, 246–249
Crop and livestock reporting, 1862–1893, by various agencies, reviewed, 179–199
Crop insurance, selections and excerpts. Green, R. M., *in his* Crop insurance problems (1936), 986–987
Economic work of Dept. placed under one management, July 1, 1921, 449
Establishment of Dept. under Act of May 15, 1862, 179
Farm management work in Dept. started in 1902, by W. J. Stillman, 81, 605
Farm survey work for Dept. in Missouri started in 1908 by D. H. Doane, 81
Historical-geographical work in Wash., 315–323
Market services of Dept., 1921–1932, 601–640
Organization chart, 1839–1922, 605
Price reporting, 1862–1927, 483–487
Serial Publications (Bulletins), 1914–1925
41. Farm management survey of three representative areas in Ind., Ill. and Iowa (Thomson and Dixon). (1914), 366–367, 810

Govt. Studies: Federal (*cont.*)
Agriculture, Dept. of (*cont.*)
341. Farm management practice of Chester Co., Penn., 1911–12 (Spillman). (1916), 319, 368–369, 374
384. Costs and sources of farm mortgage loans in U. S. (C. W. Thompson). (1916), 925–926
409. Factors affecting interest rates and other charges on short-term farm loans (C. W. Thompson). (1916), 926–927
530. Organization and management of a farmers' mutual fire ins. co. (Valgren). (1917), 980–981
786. Prevailing plans and practices among farmers' mutual fire ins. cos. (Valgren). (1919), 981
840. System of records for local farmers' mutual fire ins. cos. (Valgren). (1920), 982
912. Hail insurance on farm crops in U. S. (Valgren). (1920), 894
920. Farm profits — figures for the the same farms for series of years (Dixon and Hawthorne). (1920), 368
937. Cooperative grain marketing (Mehl). (1921), 646
963. Cost of producing sugar beets in Utah and Idaho, 1918–1919 (Moorhouse and Nuckols). (1921), 424
994. Methods of conducting cost of production and farm organization studies (Peck). (1921), 427–428
999. Prices of farm products in the U. S. (Warren). (1921), 493–494
1020. Harvest labor problems in the wheat belt (Lescohier). (1922), 895–896
1043. Crop insurance (Valgren). (1922), 985–986
1047. Farm mortgage loans by banks (Valgren and Engelbert). (1921), 939
1048. Bank loans to farmers on personal and collateral security (Valgren and Engelbert). (1922), 940
1095. Producers' cooperative milk distributing plants (Jesness, *et al.*). (1922), 646
1106. Legal phases of cooperative associations (Hulbert). (1922), 646
1109. Sales methods and policies of a [cranberry] growers' national marketing agency (Hobson and Chaney). (1923), 646, 647
1220. Farm labor in Mass. (Folsom). (1921), 891–892
1230. Conditions affecting demand for harvest labor in the wheat belt (Lescohier). (1924), 896
1271. Farm organization in S. W. Minn. (Pond and Tapp). (1924), 320, 433–437
1285. Truck-farm labor in N. J., 1922 (Folsom). (1925), 892–894
1295. Land settlement and colonization in the Great Lakes States (Black and Gray). (1924), 867
1296. Farm organization in central Kansas (Grimes, *et al.*). (1925), 121, 437
Serial Publications (Circulars), 1927–1931
16. Economic aspects of marketing milk and cream in New England (Schoenfeld). (1927), 712
54. Developments and problems in farmers' mutual fire ins. cos. (Valgren). (1928), 983
132. Rept. of committee appointed . . . to consider plan of organization . . . for office of Farm Management and Methods for making cost of production studies (1919), 422
138. Rept. of committee appointed to consider . . . land economics as one of Divisions of . . . proposed Bureau of Farm Management and Farm Economics (1919), 849–850, 852
160. Economic aspects of land settlement in the cutover region of the Great Lakes States (Hartman and Black). (1931), 869
Serial Publications (Crops and Markets) v. 4, 1927, 245
Crops and markets supplement, v. 1, 1924, 486
Serial Publications (Department Bulletins), 1920–1927
896. Cost of producing cotton (Moorhouse and Cooper). (1920), 424
943. Cost of producing wheat on 481 farms in . . . six named states, crop year 1919 (Cooper and Washburn). (1921), 424
1144. Cost of milk production on 48 Wisconsin farms (Mendum). (1923), 408–410
1150. Accounting records and business methods for livestock shipping associations (Robotka). (1923), 646

1237. Organization and development of a cooperative citrus fruit marketing agency (McKay). (1924), 646
1261. Operating methods and expense of cooperative citrus fruit marketing agencies (McKay). (1924), 646
1277. Input as related to output in farm organization . . . . (Tolley, Black and Ezekiel). (1924), 138–140, 442–446
1283. Marketing and distribution of Amer. grown Bermuda onions (Stevens). (1925), 711–712
1296. Farm organization in central Ky. (Grimes, *et al.*). (1925), 437
1302. Development and present status of farmers' cooperative business organizations (Elsworth). (1924), 646
1351. What makes the price of oats (Killough). (1925), 455, 503
1392. Cooperative marketing of cotton (Gatlin). (1926), 646
1400. Factors affecting farmers' earnings in S. E. Penn. (Ezekiel). (1926)), 373
1414. Management of . . . cooperative associations marketing fruits and vegetables (McKay and Kuhrt). (1926), 646
1440. Factors affecting price of hogs (Haas and Ezekiel). (1926), 455, 503–504
1442. Markets, expenses and profits in retailing meat (Gardner). (1926), 713
1444. Cotton prices and markets (Cox). (1926), 503, 713–715
1445. Services in cotton marketing (Cox). (1926), 715–717
1464. Market classes and grades of cattle (Slater). (1927), 713
1479. Speculative transactions in 1926 May wheat futures (Duvel and Hoffman). (1927), 504
1480. Reliability and adequacy of farm-price data (Sarle). (1927), 485

Serial Publications (Department Circulars), 1921–1927
77. Suggestions for a state law providing for organization of farmers' mutual fire insurance cos. (Valgren). (1920), 981–982
197. Credit association as an agency for rural short-time credit (Valgren and Engelbert). (1921), 938
397. Farmers' cooperative business study — staple cotton assn., 1926, 646
403. Business set-up of a cooperative marketing assn. (Christensen). (1926), 646
407. Membership relations of cooperative assns. [cotton and cheese] (Jones and Jesness). (1927), 646
416. Demand, marketing and production of Ore. and Wash. prunes (Critchfield). (1927), 717–719

Serial Publication (Farmers Bulletins), 1914–1928
593. How to use farm credit (Carver). (1914), 927
654. How farmers may improve their personal credit (Thompson). (1915), 927–928
792. How the Federal Farm Loan Act benefits the farmer (Thompson). (1917), 928
1088. Selecting a farm (Thompson). (1920), 111
1271. Farm lands available for settlement (Henderson). (1922), 865
1385. Buying a farm in an undeveloped region (Henderson). (1924), 865, 866
1564. Farm budgeting (Hutson). (1928), 441

Serial Publications (Miscellaneous Circulars), 1924
32. Practical farm economics (Taylor, Tolley and Tapp). (1924), 140

Serial Publications (Miscellaneous Publications), 1929–1937
36. History of agric. (True). (1929), 71
150. Bibilography on marketing agric. products (Bercaw and Colvin). (1932), 711
171. Crop and livestock reporting service of U. S. (statistical staff of Crop and Livestock Estimates Div.). (1933), 486
218. Forest taxation in U. S. (Fairchild and associates). (1935), 865
251. History of agric. experimentation and research in the U. S., 1607–1925 (True). (1937), 606, 615

Serial Publications (Reports), 1913
98. Systems of marketing farm products and demand for such products at trade centers; summary by C. B. Sherman (1913), 526–533

Serial Publications (Statistical Bulletins), 1927
14–17. Prices of farm products received by producers, 1899 and 1909 (1927), 487

Serial Publications (Technical Bulletins, 1928–1940

Govt. Studies: Federal (*cont.*)
Agriculture, Dept. of (*cont.*)
40. Agric. Cooperative assns., marketing and purchasing, 1925 (1928), 646
50. Factors affecting price of cotton (Smith). (1928), 456
57. Cooperative marketing of livestock in U. S. by terminal assns. (Randall). (1928), 646
69. Marketing Amer. cotton in England (Cox). (1928), 717
78. Marketing Amer. cotton on continent of Europe (Cox). (1928), 717
79. Major transactions in 1926 Dec. wheat futures (Duvel and Hoffman). (1928), 504
179. Cooperative marketing of fluid milk (Metzger). (1930), 646, 647–648
199. Trading in corn futures (Hoffman). (1930), 504–505
288. Farm mortgage credit (Wickens). (1932), 946–947
322. Agric. credit corporations affiliated with cotton cooperative marketing assns. (Rowe). (1932), 952–953
539. Federal seed-loan financing . . . (Wall). (1936), 922
777. Country banking in Wisc. during the depression (Garlock). (1941), 972–974
Serial Publications (Weather, Crops and Markets) March 17, 1923. Taxes on farm lands, by states, in 1913/14 and 1921/22, 1000
Serial Publications (Yearbook), 1894–1940
1894, 1896. Ann. rept. Secy. Agric. (Morton), 512, 513
1897. Ann. rept. Secy. Agric. (Wilson) 1st, 514
Rept. chief Foreign Markets Section (Hitchcock) 1st, 515
1900. Appointment statistical field agents; use of cable for transmitting foreign data during growing months, 215
Number of field agents employed, 228
1902. Appointment of additional field agents, 215
Extension of fruit markets abroad; Secy. Agric. (Wilson), 516
Fruit and vegetable export trade, 516
1903. Nation's farm surplus (Holmes), 524–525
1908. U. S. membership in Int. Inst. of Agric. established, 257
1909. Average monthly farm price, 485
1915. Grain Futures Act, 616
1916. Farm tenancy (Spillman and Goldenweiser), 822
Farmers' mutual fire ins. (Valgren), 979–980
1918. Cattle loans (Cole), 935
1923. Rept. to President on wheat situation, Secy. Agric. H. C. Wallace, 321
Farm ownership and tenancy (L. C. Gray, *et al.*), 850–852, 869
Utilization of lands for crops (L. C. Gray, *et al.*), 852–853, 862–863
1924. Farm credit, ins. and taxation (Olsen, *et al.*), 944–946, 983
1934. Cotton production statistics, 220
1935. Historical study of production and acreage series, 208
1940. Amer. agric. — the first 300 years (Edwards), 321–323
Subsidiary Offices, Bureaus and Divisions
A. Agric. Economics Bureau ("B.A.E.")
Agric. outlook. Repts., 1923–1933, 449–452
Ann. rept. of chief
1923. Ann. estimate of volume of farm taxes in prospect, 1001
"Intentions to plant" statement (Callender), 453, 454
1924. "Intentions to plant" (Taylor), 453
1927–1929. Work of Cooperative Marketing Div., 652
Chief of Bureau
1922–1925. H. C. Taylor, 239
1926. L. S. Tenny, acting chief, 1001
Cooperative Marketing Div. *See below*
Legal establishment, July 1, 1922, 449
Result of internal reorganization, 603–604
Marketing research studies, 1921, 1922; review, 710–765
Organization chart of predecessors, 1839–1922, 605
Outlook service initiated in 1923; idea originally enunciated by H. C. Taylor, then of Wisc., 490
Position of Bureau in field of agric. cooperation, 642–653
Representatives sent abroad for observation to improve outlook service, 476
Successor of Crop Estimates Bureau. *See below*

Suggested plan for cotton-crop ins. (Baggett and Rowe). (1939), 987–988
Summary of agric. statistics, 1923, 450
Taxation of farm real estate in Ind. (Brannen and Newton). (1925), 1001
Taxation of rented farms (Brannen and Sanders); processed (1925), 1001
Wheat situation rept. (1923), 321
B. Commissioner's Office (1862–1889)
Ann. repts. 1862/3–1866 (price statistics), 483–484
1862/3, 179–181
1867 (wage system), 288
Commissioner, 1862 (I. Newton), 179
1885–1889 (N. J. Coleman), 8
C. Cooperative Marketing Division
Created July 2, 1926, 652
Repts., 1927 (1929), 652
Transferred to Federal Farm Bd., Oct. 1, 1929, 652
D. Crop Estimates Bureau (1914–1921)
Letter Secy. Agric. (Meredith) to Okla. farmer (1920), 237–239
Merged into unit which, in 1922, was formally established as Bureau of Agric. Economics, 239
Preparation of Bureau estimates (Murray). (1917), 235–236
Proceedings of meeting of field agents, crop specialists, etc., Jan., 1917, 231–236
Reorganization in 1914 (Estabrook), 236; in 1921, 239
Succeeded Statistics Bureau on July 1, 1914, 230
E. Crop and Livestock Estimates Division (1921)
Reorganization in 1921, 239
F. Crop Reporting Board (1905–)
Establishment; operations, 226–227
Special rept. on revised estimates of U. S. cotton acreages and yield, 1866–1931, 1933, 220
G. Dairy Div. (Animal Ind. Bur.)
Marketing work of Div. Statement by B. H. Rawl, chief of Div., 1913, 536
H. Dairy Section (Agric. Econ. Bur.)
Established in 1931, 251
I. Economic Council
Appointment by Secy. of Agric. in 1921; functions and membership, 602
J. Experiment Stations Office
Circulars. 32. Rept. of Committee on Instruction in Agric., Amer. Assoc. of Agric. Colleges and Exp. Stas. (1896), 54
(1896–1912), 70–71
(1912), 90–95
Review of ten years of irrigation investigations (Teele). *In* Ann. rept., 1908, pp. 355–405 (1909), 840–842
K. Farm Management Office
Chief of Office, 1908–1918. W. J. Spillman, 420, 422
1919. H. C. Taylor, 422
Division of Land Economics, 849–850
Historical-geographical atlas project; O. E. Baker and O. C. Stine participants, 316–317
Reorganization; special committees appointed, 1919; recommendations, 848–850
Statement of chief (Taylor), on work of Office, before House Committee on Agriculture, Dec., 1919 (1920), 317
Work of Office relating to land classification and tenure, 1917, 822–824, 861
L. Farm Management and Costs Division
Number of cost records obtained from 17 states for each of 3 crops, 423
Seminar conducted by J. D. Black, 1922, 442
M. Farm Management and Farm Economics, Office of
Ann. rept. of chief, 1922. H. C. Taylor (encouraged adoption of Ill. demonstration method), 381
Farm management surveys, 1907–1924; reviewed, 366–375
N. Federal Crop Insurance Corp.
Types of crop insurance, 987
O. Foreign Markets Div. (1903–1908)
Holmes, G. K., in charge, 524–526
Name changed to Production and Distribution Div., 526
Subordinate to Bureau of Statistics, 524
P. Foreign Markets Section (1894–1903)
Chief of Section 1897–1903. F. M. Hitchcock, 513–514
Ann. rept. 1st., 1897 foreign markets for agric. products, 515
Circular 1. Peaches . . . in England (1895), 512

Govt. Studies: Federal (*cont.*)
Agriculture, Dept. of (*cont.*)
Organization of Section; purpose, 512–513
Q. Graduate School, 604
R. Irrigiation and Drainage Office
Irrigation investigations, 1899–1907 in charge of E. Mead, 830
Work of R. P. Teele, 830, 840–847
S. Land Economics Division
Organization in 1919; L. C. Gray placed in charge; outline of program, 848–850
T. Livestock Section
Set up in Crop and Livestock Estimates Div. in 1922; operation, 250–251
U. Markets, Bureau of
Market News Service; 1920, 633–636
Market reporting service on livestock inaugurated in 1918, 713
Proposals for establishment of. *In* Agric. Dept. Rept. No. 98, 1913, 526–533
Interest of Congress (61st–63rd) in proposals; legislation; Committee reports and hearing, 1910–1913, 526–534
V. Markets, Office of (1913–)
Created May 16, 1913, 510, 542
Chief of Office, 1913–1919. C. J. Brand, 510, 542, 546
1919. G. Livingston, 546
Office of Markets of U. S. Dept. of Agric. (Brand), 1913, 642
W. Markets and Crop Estimates, Bureau of
Committee on methods of crop estimates; membership; suggestions, 1922, 240–241
X. Markets and Rural Organization, Office of (1914–). Change of name in 1914, authority for, 545
Origin of farm credit research, 924
Y. Plant Industry Bureau
Bulletin 236. Farm management (Hays, W. M., *et al.*) (1912), 76, 395
Circulars 75. Agric. surveys of four townships in southern N. H. (Thompson). (1911), 366
118. Economics of crop disposal (Scofield). (1913), 534–535
128. Some profitable and unprofitable farms in N. H. (Robertson and Dodge). (1913), 367
Cooperative cotton handling and marketing work (Brand), 1913, 538–540
Grain Standardization and its relation to marketing conditions, 1913, 537
Z. Poultry Section
Established in 1931 in Crop, Livestock Estimates Div., 252
AA. Production and Distribution Div. (1908–)
Successor of Foreign Markets Div., 526
BB. Publications Div.
Bulletin 3. .Historical sketch of Dept. of Agric. (Greathouse), rev. ed. (1898), 208
CC. Secretary's Office (1889–)
Circulars 60. Amortization methods for farm mortgage loans (Truesdell and Thompson). (1916), 928
132. Rept. of Committee . . . plan of organization . . . Office of Farm Manage- (1919), 848
Reports
1889. N. J. Colman, Mentioned, 8
1893–1897. J. S. Morton
Appointment, 8
Annual reports, 1894 (Foreign markets), 512
1895 (Conference of Committee on Crop Repts.), 204–205
1896 (Crop reporting system in use in Div. of Statistics), 206
Work of Foreign Markets Section, 512–513
1897–1913. J. Wilson
Annual reports, 1897 (Experimental shipments of butter to London), 514
1910 (Farm wage rate investigations), 881
1913–1920. D. F. Houston
Annual reports, 1914
1914 (Cotton Futures Act), 615–616
1918 (Seed loans program initiation), 921–922
1919 (Trained field agents in crop reporting service), 236–237
Committee to consider plan of organization and methods of making cost of production studies; appointment, members and rept., 422
Statement concerning marketing of farm products, 1913, 542–544

1921–1924. H. C. Wallace
Address on cooperative marketing, Feb., 1924, 649–651
Annual rept., 1921. Consolidation of economic work of Dept. of Agric., 602–606
Crop insurance, 983–988
Rept. to President on wheat situation, 1923, 321
Statement concerning agric. situation at time, 596–599
1925–1929. W. M. Jardine, 630
DD. Statistician, Office of (1863–1893)
Created in 1863, 180
Chief statisticians: L. Bollman, 1863–1866, J. R. Dodge, 1866–1878, 1881–1893; C. Worthington, 1879–1880, 181–205
Annual and monthly repts. by Bollman and Dodge, 1863–1878, 1881–1893, 183–199
National Board of Trade. Criticism of work of J. R. Dodge and H. A. Robinson, 199–205
Repts. on wages of farm labor, 1866–1892, 873–877
Tribute to work of J. R. Dodge, 510, 511
EE. Statistics, Bureau of (1903–1914)
Chief statisticians, 1897–1905, J. Hyde; 1905–1906, W. M. Hays; 1906–1913, V. Olmsted, 227–229
Annual rept., 1910 (Olmsted), 485, 487
Bulletins, 1904–1912
29. Methods and routes for exporting farm products (Ward). (1904), 525
30. International sugar situation (Rutter). (1904), 525
31. Imports of farm and forest products, 1901–1903 (1905), 525
32. Exports of farm and market products, 1901–1903 (1905), 525
48. Cost of producing farm products (Hays, *et al.*), 1906. Also published as Bulletin 97, Minn. Agric. Exp. Sta., 76, 395, 397
49. Cost of hauling crops from farms to shipping points (Andrews). (1907), 525
50. Hops in principal countries (Merritt). (1907), 525
55. Meat supply and surplus (Holmes). (1907), 525
65. Russia's wheat trade (Rubinow). (1908), 525
66. Russian wheat and wheat flour in European markets (Rubinow). (1908), 525
68. Cereal production of Europe (Rutter). (1908), 525
69. European grain trade (Rutter). (1908), 525
73. Cost of producing Minnesota farm products (Parker and Cooper). (1910). Also published as Bulletin 117, Minn. Agric. Exp. Sta., 399
88. Cost of Minneosota dairy products, 1904–1909 (1911). Also published as Bulletin 124, Minn. Agric. Exp. Sta., 399–400
99. Wages of farm labor (Holmes). (1912), 880
Crop Reporter. Vol. 5–7, 10–12, 1903–1905, 1908–1910, 209–211, 485
Crop Reporting Bd. established in 1905; operations, 226–227
Succeeded Div. of Statistics July 1, 1903; reorganization, 215–216
Title of Bureau of Crop Estimates assumed July 1, 1914, 230
Work of Bureau under Hyde, Hays and Olmsted, 208–230
FF. Statistics, Division of (1893–1903)
Became Bureau of Statistics on July 1, 1903, 215, 524
Circular 5. Local taxation as affecting farms (Robinson) 1897, 994–995
Chief statisticians, 1893–1897, H. A. Robinson; 205–208 1897-1905, J. Hyde; review of work of, 208–217
Repts., 1893, H. A. Robinson, 391–393
Crop Reporter. Vol. 1–4, 1899–1902, 209–211, 217
Foreign crop reporting service improved; use of cable begun in 1902, 215
Miscellaneous Series Bulletin 16. Cost of cotton production (Watkins). (1899), 394

Govt. Studies: Federal (*cont.*)
Agriculture, Dept. of (*cont.*)
Miscellaneous Series Reports, 1893–1894
4. Wages of farm labor in U. S. (Dodge). (1892), 873–877
6. Production and distribution of principal agric. products of the world (Dodge). (1893), 510–511
8. Recent features of our foreign trade (Peters). (1894), 512
National Board of Trade, 205–208
Committee of Inquiry on Agric. Statistics. Investigation of work of Div., 1902, 213–215
Statistical Reports, new series. 113. Expense of raising wheat and corn (Robinson). (1894), 391–392

SUBSIDIARY OFFICES, ETC., (*cont.*)
Census Bureau. *See* Census of U. S.
Country Life Commission (1909), 353–355
Farm Credit Administration. Ann. rept. 1st., 1933, 974–975
Federal Farm Board
Created to support prices, 600
Division of Cooperative Marketing created 1926, transferred to F.F.B., 1929, 652
Federal Reserve Board (1913–1935). Bulletins
Cattle loan cos. (1922), 935
Financing production and distribution of cotton (Carson). (1923), 943–944
Tobacco finance (1921), 941–942
Grain Futures Administration (1922–1936). Fluctuations in wheat futures
Sen. Doc. 135, 69th Congress, 1926, 504
Industrial Commission. Repts. Vol. 1–19, 1900–1902. Vol. 6. Distribution of farm products (Crowell), 1901, 516–524, 556
Vol. 11. Amer. farm labor (Dodge, *et al.*). (1901), 877–880
Interior Dept. Patent Office. *See below*
Keep Commission, 220–225
Patent Office (1802–1849) State Dept.
Commissioner of Patents
1835–1845. H. L. Ellsworth, 170–172
1845–1849. E. Burke, 173–174
Ann. rept., 1839–1848, 170–175
1842 (conception in 1840 of value of statistics to farmer, 172
1845 (wages of farm labor), 873
Crop and livestock estimates 1838–1848. Issued 1838–1845, suspended 1846, confusion in 1847–1848, 169–174
Transfer of Patent Office from State to Interior Dept. in 1949, 174
Patent Office (1849–1861) Interior Dept.
Circular, 1856, calling for crop statistics, 176
Commissioner of Patents
1849–1852. T. Ewbank, 174
1853–1857. C. Mason, 175–176
Ann. rept., 1849 cotton data in earlier repts. questioned, 389; explanation of discontinuance of crop estimates, 175
Crop production estimates suspended, 1849–1861, 174–175
Proposals for decentralization of crop production statistics, 1856 (Mason), 176
Post Office Department
Cooperation with Dept. of Agric. in arranging collection of livestock statistics by rural mail carriers, 246–249
President of U. S., Coolidge. Address at Internat'l. Livestock Exposition, Chicago, 1924, 452
Harding. Address before Nat'l. Agric. Conference, 1922, 580–581
See also U. S. Presidents
Government Studies. U. S. Federal/State Level
Cooperative relations; development and effect, 253–254
U. S. Agric. Economics Bureau and Idaho Agric. Exp. Sta. cooperated in preparation of several bulletins, 1927–1932, 467
Crop Estimates Bureau and nine states entered cooperative agreements for pooling crop reporting resources, 236–237
Farm Management Office
Cooperation with States in training farm management demonstrators, 377–378
Projects cooperatively operated, 420–421
and Cornell Univ. Agric. Exp. Sta. Bulletin 377 (1916), 412–415
Plant Industry Bureau and Minn. Agric. Exp. Sta.
Farm management: organization of research and teaching (1906). Plant Ind. Bur. Bulletin 236 and Minn. Agric. Exp. Sta. Bulletin 125, 76, 395, 397
Statistics Bureau and Minn. Agric. Exp. Sta.

Cost of producing farm products (1906). Statistics Bur. Bulletin 48 and Minn. Exp. Sta. Bulletin 97, 395, 446
Cost of producing Minn. farm products, 1902–1907. Statistics Bur. Bulletin 73 and Minn. Agric. Exp. Sta. Bulletin 117 (1910), 399
Minn. dairy products, 1904–1909 (1911). Statistics Bur. Bulletin 88 and Minn. Exp. Sta. Bulletin 124, 399–400
Government Studies. U. S. State Level
Arkansas
Agric. Exp. Sta. Bulletins, 1928–1935
228. Farm credit in a plantation and an upland cotton district in Ark. (Gile and Moore). (1928), 957–958
259. Organization of agric. credit corporations in Ark. (Gile). (1931), 951–952
281. Agric. credit corporations in Ark. in 1931 (1932), 952
315. Bank failures in Ark. (Garlock and Gile). (1935), 971–972
California
Agric. Exp. Sta. Bulletins, 1926–1930
413. California poultry industry; statistical study (Voorhies). (1926), 470
423. Apricots (Wellman). (1927), 471
429. Economic status of grape industry [of Calif.] (Shear and Gould). (1927), 471–472
432. Some economic problems involved in the pooling of fruit (Erdman and Wellman). (1927), 696–697
437. Economic aspects of the dairy industry [of Calif.] (Voorhies). (1927), 472
444. Beans. (Wellman and Braun). (1927), 472–473
449. Economic aspects of the apple industry (Rauchenstein). (1928), 473
452. Economic aspects of the pear industry [of Calif.] (Shear). (1928), 473
453. Almonds (Wellman and Braun). (1928), 473
483. Utilization of surplus prunes (Mrak and Cruess). (1929), 753
493. Fruit markets in eastern Asia (Crocheron and Norton). (1930), 753
497. Study of shipment of fresh fruits and vegetables to the Far East (1930), 753
501. Marketing Calif. apples. (Stokdyk, *et al.*). (1930), 754
504. Economic problems of Calif. agric. (Agric. economics staff). (1930), 474–475, 698–699
516. Operations of Poultry Producers of Southern Calif. (Tinley and Stokdyk). (1931), 697–698
557. History of cooperation in the marketing of Calif. fresh deciduous fruits (Kraemer and Erdman), 1933, 686, 689–691
943. Fruit markets in eastern Asia (Crocheron and Norton). (1930), 469
Circulars. 1914–1925
123. Fundamental principles of cooperation in agric. (Powell). (1914); reprinted in 1920, 691–692
193. Farm labor in Calif. (Adams and Kelly). (1918), 889
222. Fundamental principles of cooperation in agric. (Powell). 1930 reprint of circular 123, 691–692
298. Possibilities and limitations of cooperative marketing (Erdman). (1925), 693–696
Circulars, Univ. of Calif.
Farm management course and College of Agric. *See* Educational Facilities
Publications in Economics, v. 6–7. Mexican labor in U. S. (Taylor), 890
Colorado
Agric. Exp. Sta. Bulletins. 1906–1926
108. Development of Rockyford cantaloupe industry (Blinn). (1906), 638
312. Harvesting and marketing cantaloupes and honey dew melons in the Ark. Valley of Colo., 1924–1925 (Sanborn), 638
Connecticut
Agric. Exp. Sta. Bulletins. 1926
138. Conn. market demand for vegetables (Davis and Waugh). (1926), 464–465
139. Soil type as a factor in farm economy. I. Town of Lebanon [1922–1923] (Davis and Hendrickson). (1926), 375–376
Labor Statistics Bureau
Ann. rept. 4th, 1888 (mortgage status of 693 farms surveyed), 912
Idaho
Agric. Exp. Sta. Bulletins. 1927–1932

Govt. Studies: Federal (*cont.*)
Idaho (*cont.*)
151. Farming business in Idaho (1927), 467
152. Dairy situation in Idaho (1927), 467
153. Potato situation in Idaho (1927), 467
154. Poultry situation in Idaho (1927), 467
162. Statistics on prices and destinations of Idaho apples (Wells). (1928), 467
166. Factors relating to prices of Idaho potatoes (Heflebower). (1929), 467
173. Farming systems for eastern Wash. and northern Idaho (Severance, Hunter and Eke). (1930), 467
177. Cherry industry in the Lewiston orchards. . . . (Blodgett). (1930), 467
190. Type in market swine and its influence on quality of pork (Nordby). (1932), 467
191. Hog prices and hog enterprise on Idaho farms (Gaston). (1932), 467
195. Method of determining what to produce (Hunter and Eke). (1932), 467–468
Illinois
Agric. Exp. Sta. Bulletins. 1898–1938
50. Cost of production of corn and oats in Ill. in 1896 (Weston). (1898), 394
62. Market classes of horses (Davenport). (1901), 547–548
78. Market classes and grades of cattle with suggestions for interpreting market quotations (Mumford). (1902), 547, 548
92. City milk supply (Fraser). (1903), 547
97. Market classes and grades of swine (Dietrich). (1904), 547
113. Shrinkage of ear corn in cribs (Hume and Center). (1907), 547
120. Milk supply of Chicago and 26 other cities (Trueman). (1907), 547
122. Market classes and grades of horses and mules (Obrecht). (1908), 547
124. Marketing the muskmelon (Lloyd). (1908), 547
129. Market classes and grades of sheep (Coffey). (1908), 547
147. Market classes and grades of meat (Hall). (1910), 547
269. Marketing of milk in the Chicago dariy market (Ross). (1925), 737–738
293. Adjusting hog production to market demand (Elliott). (1927), 741
295. Costs of storing corn on the farm (Rickey). (1927), 739–740
312. Marketing Calhoun County apples (Lloyd and Newell). (1928), 742
315. Market destinations of Ill. grain (Stewart, Norton and Rickey). (1928), 740
318. Cost and margins . . . in the distribution of fluid milk in four Ill. market areas (Brown). (1928), 738–739
324. Seasonal features of Ill. grain market (Norton and Stewart). (1929), 740–741
326. Developmental study of a rural-urban trade area (Mumford *et al.*). (1929), 466, 743
331. Practices . . . of cooperative livestock shipping assns. in Ill. (Ashby). (1929), 741
334. Refrigeration of some Ill. fruits in transit (Lloyd and Newell). (1929), 743
342. Truckage rates; shipping Ill. livestock (Ashby). (1930), 741
350. Factors influencing keeping qualities of Ill. fruit in transit (Lloyd and Newell). (1930), 743
379. Causes of damage to fruits and vegetables during shipment (Lloyd and Newell). (1932), 743
444. Farm practices and their effects on farm earnings (Mosher and Case). (1938), 403
Extension work in Ill. in 1915–17 under H. C. M. Case, 380
Farm Bureau — Farm Management Service; origin in 1925; operation; leaders, 403
Industrial University. Courses in agric. *See* Educational Facilities
Labor Statistics Bureau
Biennial repts. 5th, 1888 (agric. credit data, 1870–1887), 910
Indiana
Agric. Exp. Sta. Bulletins. 1925–1932
295. Production and marketing of farm products in Wayne Co. (Overton and Edwards). (1925), 461
305. Increasing farm profits with more early potatoes in Ind. (Overton). (1926), 462
309. Indiana peaches (Gaylord). (1927), 639

310. Feeding and marketing of early spring pigs on Ind. farms (Lloyd and Young). (1927), 752
317. Grading tomatoes for quality (Gaylord and Cleaver). (1927), 639
318. Death and crippled losses in shipping hogs to market (Wiley). (1927), 752
320. Prices of farm products in Ind. (Young and Day). (1928), 752
321. What is happening to agric. in northwestern Ind.? (Overton). (1928), 462
322. Indianapolis apple market (Cleaver, Cooper and Park). (1928), 753
328. Buying tomatoes on grade (Gaylord and Cleaver). (1929), 639
334. Marketing eggs on a graded basis (Menefee). (1929), 640
336. Buying tomatoes on grade (Gaylord and MacGillivray). (1930), 639
337. Motor transportation of hogs to Indianapolis (Wiley). (1930), 752
352. Indianapolis apple market: 1929–30 crop (Gaylord and Cleaver). (1931), 753
361. Marketing Indiana potatoes (Gaylord and Cleaver). (1932), 640
364. Variation in local marketing procedure for . . . northwestern Ind. (Robertson and Bonham). (1932), 463
365. Changes in farming in Lake and Porter Counties, Ind. (Robertson). (1932), 464

Dept. of Statistics and Geology
Ann. rept. 1st, 1879 (agric. credit data, 1873–1879). (1880), 909–910

Iowa
Agric. Exp. Sta. Bulletins. 1915–1923
159. Farm leases in Iowa (Lloyd). (1915), 811–812
200. Cooperative livestock shipping in Iowa in 1920 (Nourse and Hammans). (1921), 672–673
209. Accounting records for livestock shipping assns. (Robotka). (1922), 674
211. Fifty years of farmers' elevators in Iowa (Nourse). (1923), 674–676

Circulars. 1929
113. When shall we sell our corn? (Shepherd). (1929), 501
118. Does Iowa dump its grain? (Shepherd). (1929), 502

Reports. Current Economic Series
6. Farm mortgage debt in Iowa (Murray and Garlock). (1927), 960–961

Kansas
Agric. Exp. Sta. Bulletins. 1917–1932
218. Marketing Kans. butter (Macklin). (1917), 565–566
229. Farm storage as a factor in marketing Kans. wheat (Green). (1922), 724
232. Assessment and equalization of farm and city real estate in Kans. (Englund). (1924), 1005
234. Tax revision in Kans. (Englund). (1924), 1006
235. Trend of real estate taxation in Kans. (Englund). (1925), 1006–1007
237. Federal aid as part of agric. policy — special reference to distribution of tax levies (Englund). (1926), 1007
244. Shortage of farm storage space; inability to get local bank credit on movement of Kans. wheat to market (Green). (1927), 725
255. Dairy farm organization in SE Kans. (Hodges, Kifer and Nickols). (1931), 440
258. Factors influencing time of buying feeder steers and selling them as choice summer-fed steers (Henney). (1932), 726

Circulars. 1925–1926
114. How to grow and market high-protein wheat (Call, Green and Swanson). (1925), 614, 725
121. Seasonal fluctuations of wheat prices (Green). (1925), 725
132. Year-to-year and seasonal fluctuations in hog prices (Green and Howe). (1926), 726

Technical Bulletin
28. Some factors influencing mid-season potato market (Stokdyk). (1931), 726

State Agric. College

Extension Circulars. 1926–1927
53. Standard packs, packages and grades for Kans. fruits and vegetables (Stokdyk and Reed). (1926), 726
54. Judging price risks in marketing wheat (Green and Stokdyk). (1927), 725–726

Kentucky
Agric. Exp. Sta. Bulletins. 1902–1931

Govt. Studies: State (*cont.*)
Kentucky (*cont.*)
202. Preliminary study of marketing Burley tobacco in central Ky. (Bohannan and Campbell). (1916), 565
221. Marketing hemp (Humphrey). (1919), 719
246. Marketing Ky. strawberries (Jesness and Card). (1923), 678–679
247. Marketing Ky. bluegrass and orchard grass seeds (Card). (1923), 719–720
270. Ky. livestock auction sales organizations (Johnson). (1926), 720
271. Cooperative marketing and price control (Jesness). (1926), 681–684, 719
278. Marketing Ky. livestock (Johnson). (1927), 720–721
283. Marketing Ky. eggs (Card). (1928), 721
285. Marketing Ky. poultry (Card). (1928), 721
287. Marketing of tobacco (Jesness). (1928), 722–723
288. Cooperative marketing of tobacco (Jesness). (1928), 684–686
319. Organization and management problems of cooperative strawberry marketing assns. in Ky. (Phillips and Card). (1931), 680
Univ. of Ky.
Agric. organization in the U. S. (Wiest). (1923), 977
Louisiana
Agric. Extension Div.
Extension Circular
89. Louisiana agric., progress and opportunities (B. H. Critchfield, *et al.*). (1926). Part 1–5. 1. Agric. conditions, general corps and livestock. 2. Climate and reforestation. 3. Fruits and vegetables. 4. Agric. situation in rice section, St. Landry Parish and sugar cane section. 5. Agric. situation in Shreveport trade area, 466–467
Massachusetts
Agric. Exp. Sta. Bulletins. 1916–1929
169. Connecticut Valley onion supply and distribution (Cance, Machmer and Read). (1916), 563
193. Supply and distribution of Connecticut Valley cigar leaf tobacco (DeVault). (1919), 564
224. Cost of marketing apple crop of 1923 (Jefferson). (1925), 726–727
228. Economic study of Mass. apple industry (Yount and Jefferson). (1926), 727–728
231. Market outlet for Mass. apples (Jefferson). (1927), 728–729
243. McIntosh apple in the New York market (Jefferson). (1928), 729
250. Consumer demand for apples (Jefferson). (1929), 729–730
State Bd. of Agriculture
Ann. rept., 1895. Necessities and demands of modern dairying (Hoard). (1896), 393
Michigan
Agric. Exp. Sta. Bulletin
178. Production and marketing of wool (Mumford). (1900), 547
Special Bulletins. 1925–1932
137. Marketing Mich. potatoes (Horner). (1925), 744
170. Detroit milk market (Horner). (1928), 745
171. Farmers' cooperative buying and selling organizations in Mich. (Clayton and Horner). (1928), 704
172. Farm real estate assessment practices in Mich. (Newton and Hedrick). (1928), 1015
209. Consumer demand for apples in Mich. (Gaston). (1931), 745
217. Marketing Mich. beans (Hedrick). (1931), 746
227. Motor truck marketing of fruits and vegetables (Motts). (1932), 747
Technical Bulletins. 1930–1933
107. Lansing food survey (Scholl and Hedrick). (1930), 466–467
133. Insurance of farm families (Gross and Bosworth). (1933), 988–989
Labor and Industrial Statistics Bureau
Ann. rept. 5th, 1888 (farm mortgage indebtedness), 911–912
University of Michigan
Participation in Lubin's export bounty prize essay proposal, 1894, 16
Minnesota
Agric. Exp. Sta. Bulletins. 1913–1935
132. Studies in egg marketing (Thompson). (1913), 550
146. Statistics of cooperation among farmers of Minn. (Weld). (1914), 653
157. Labor requirements of crop production (Cooper, Peck and Boss). (1916), 415–418

161. Labor requirements of livestock (Boss, Peck and Cooper). (1916), 418–419
173. Cost of milk production (Peck and Boss). (1918), 419–420
178. Farm tenancy and leases (Benton). (1918), 813–814
180. Experiences of northern Minn. settlers (Peck). (1918), 866
205. Study of farm organization in SW. Minn. (Pond and Tapp). (1923), 121, 320, 433–437, 442
211. Cooperative central marketing organization (Black and Price). (1924), 654–657
224. Management problems of farmers' elevators (Price and Arthur). (1925), 733
231. Judging creamery efficiency (Holt and Combs). (1926), 733
251. Economic aspects of local elevator organization (Metzger and Price). (1929), 733
278. Trucking livestock to south St. Paul (Johnson and Johnson). (1931), 658–659
282. Economic study of crop production possibilities in Red River Valley of Minn. (Pond, Sallee and Crickman). (1931), 439
283. Economic study of livestock possibilities in Red River Valley of Minn. (Sallee, Pond and Crickman). (1931), 439
284. Planning systems of farming for the Red River Valley of Minn. (Pond, Sallee and Crickman). (1931), 439
288. Study of human factor in farm management (Wilcox, Boss and Pond). (1932), 161–164
293. Farm mortgage foreclosures in Minn. (Johnson). (1932), 967
317. Land economic survey of Hubbard Co., Minn. (1935), 864

Technical Bulletins. 1922–1926

4. Wages of farm labor (Holmes). (1922), 887–889
26. Economic aspects of creamery organization (Black and Guthrie). (1924), 730–732
28. Economic aspects of local potato warehouse organization (Black, Holt and Peterson). (1925), 733
44. Study of dairy farm organization in SE. Minn. (Pond). (1926), 439

Dept. of Agric.
Bulletin
11. Marketing problems of Minn. farmers (Hughes). (1920), 657–658
Labor Bureau
Bienn. repts. 4th, 1893/94 (farm mortgage debt and foreclosures). (1895), 914–916
Univ. of Minn.
Bureau of Research in Agric. Economics (1911–1913)
Creation and purpose of Bureau; designation changed to Division in 1913, 549, 550
Publications. Price, H. B., *et al.* Marketing of farm products (1927), 658
Thesis. Critical review of research in land economics (Salter). (1948), 852, 856–870

Missouri
Agric. Exp. Sta. Bulletins. 1923–1940
199. Cooperative livestock shipping assns. in Mo. (Loomis). (1923), 700
253. Cooperative marketing for Mo. (Thomsen and Thorne). (1927), 701
262. Economics of strawberry production and marketing in Mo. (Thomsen and Thorne). (1928), 476
267. Developing new markets for Mo. butterfat (Thomsen and Reid). (1929), 702
273. Economic position of the grape industry in Mo. (Thomsen and Thorne). (1929), 476
277. Cooperative marketing of fruits and vegetables in the St. Louis market (Thomsen). (1929), 701–702
311. Operating practices of Mo. cooperative elevators (Hart, Fankhanel and Thomsen). (1932), 703
317. Livestock trucking in Mo. (Thomsen and Fankhanel). (1932), 764
421. National Conference on Land Classification. Proceedings (1940), 853

Research Bulletins

137. Factors involved in buying Mo. cream (Thomsen and Reid). (1930), 702–703
146. Marketing stock hogs in Mo. (Richards and Thomsen). (1930), 763–764

Montana
Agric. Exp. Sta. Bulletins. 1926–1930

Govt. Studies: State (*cont.*)
Montana (*cont.*)
189. Protein test in marketing wheat (Whitcomb and Bell). (1926), 612–613
213. Marketing high protein wheat (Bell). (1928), 614
226. Current problems of Mont. farmers' elevators (Bell). (1930), 614
Circular
135. Larger markets for Mont. wheat (Bell). (1927), 613–614
Nebraska
Agric. Exp. Sta. Bulletin
29. Cost of farm crops (Ingersoll and Perin). (1893), 391
Research Bulletin
Farm mortgage history of eleven SE. Neb. townships, 1870–1932 (Hinman and Rankin). (1933), 962
Labor and Industrial Statistics Bureau
Bien. repts. 1st, 1887/88 (summary of agric. credit questionnaire survey). (1888), 910–911
New Jersey
Agric. College. Extension Bulletin
1. Farm labor (Agee and App). (1917), 883–884
Labor Statistics Bureau
Ann. rept. 12th, 1889 (real estate mortgage indebtedness and foreclosure executions, 1856, 1870, 1875, 1880–1888). (1890), 912–914
New York State. Dept. of Farms and Markets
Agric. Bulletin
164. Study of farm labor in Seneca Co. (Gillett). (1924), 885–886
Governor (Roosevelt)
Recommending survey of rural lands of the State (1931), 865
Reforestation Commission. Rept. (1932), 865
State College of Agric. Farm Economics. No. 32. Why taxes are high. (Warren). (1926), 1008–1009
North Carolina
Agric. Exp. Sta. Bulletins. 1927–1928
252. Profitable farm combinations (Forster and Saville); investigations conducted jointly with U. S. Dept. of Agric. (1927), 440
260. Systems of livestock farming for mountain region of N. C. (1928), 440
Dept. of Agric.
Farm credit in N. C.: survey of 800 farms (Yoder, Beardsley and Honeycutt). (1923), 953–954
State College of Agric. Bureau of Economic and Social Research
Research Bulletin
1. Profitable farm organizations for the coastal plain of N. C. (Forster, Saville and Hutson). (1926), 438–439
Tax Commission
Rept. 1929. Farm income and taxation in N. C. (G. W. Forster, *et al.*). (1929), 1015–1016
North Dakota
Agric. Exp. Sta. Bulletin
175. Farm credit survey of four townships in Foster Co. (Willard). (1924), 956
Ohio
Agric. Exp. Sta. Bimonthly Bulletins. 1925–1926
10–11. Index numbers of production, wages and price (Falconer), 889
Bulletins. 1913–1932
266. Labor cost of producing corn in Ohio (Goddard and Elser). (1913), 400–402
331. Farmers' elevator movement in Ohio (Erdman). (1918), 663
365. Prices of Ohio farm products (Falconer). (1923), 499
375. Cooperative livestock marketing in Ohio (Wallace). (1924), 664
416. Economic aspects of Ohio farmers' elevators (Foster). (1927), 663
418. Apple industry of Ohio (Hauck). (1928), 755
427. Business study of Ohio Poultry Producers' Cooperative Assn. (Foster). (1928), 664–665
438. Losses in shipping Ohio livestock (Henning). (1929), 755–756
440. The truck and its relation to livestock marketing in Ohio (Henning). (1929), 756–757
443. Farmers' produce markets in Ohio (Hauck). (1929), 665–666
458. Factors affecting movement of Ohio wheat (Foster). (1930), 757
469. Development of market milk areas in NW. Ohio (McBride). (1930), 758
498. Market analysis of farm sales of milk to dealers in four Ohio cities (Sherman and McBride). (1932), 758
504. Marketing cannery tomatoes on grade in Ohio (Hauck). (1932), 757–758

Mimeographed Bulletins. 1929–1930
17. Large land holdings and their operation in twelve Ohio counties (Minneman). (1929), 963
26. Ohio farm land acquired by life insurance companies through foreclosure in 1929 (Morison). (1930), 962–963
Board of Agriculture
Ann. rept., 1893. Relative cost of beef and butter (Thorne), 393
State University. Agric. Extension Service
Bulletin (1922–1923)
Vol. 18. No. 5. Labor required for crop production in Ohio (Taber and Arnold), 402
State College of Agric. courses in rural economics. *See* Educational Facilities
Oklahoma
University of Oklahoma
Publications. Dale, E. E. Range cattle industry (1930), 321
Oregon
State College
Course in farm management. *See* Educational Facilities
Pennsylvania
Agric. Exp. Sta. Bulletin. 1924–1932
184. Adjusting production to meet home market demands (Dunlap, Critchfield and Carroll). (1924); joint study with U. S. Agric. Economics Bureau, 459, 461
South Carolina
Agric. Exp. Sta. Bulletin
240. Agric. production, consumption and marketing study in Greenville trade area. (Robinson and Jensen). (1927), 465
South Dakota
State College of Agric. and Mechanic Arts. Circular
9. Aspects of farm mortgage situation in S. D. and their relation to a future land policy (Johnson and Steele). (1933), 967–968
Texas
Agric. Exp. Sta. Bulletins
26. Cost of cotton production (Curtis and Carson). (1893), 391
36. Southern States Assn. of Markets. Proceedings, 1914, 686
327. Agric. economic survey of Rockwall Co., Tex. (Gabbard). (1925), 758–760
334. Trend of taxes on agric. land in Texas and distribution of farmer's tax dollar (Buechel). (1925), 1008
The Texas Agric. and Mechanical College is credited with publication of this Bulletin
345. Possibilities of Brazil as competitor of U. S. in cotton growing (Youngblood). (1926), 760
378. Marketing of vegetables in Lower Rio Grande Valley of Texas (Crawford). (1928), 761
383. Relation of farm prices to quality of cotton (Crawford and Gabbard). (1928), 761
Agric. and Mechanical College. Bulletins
B-34. Farming credit in Texas (Peteet). (1917), 935–937
Vermont
Commission on Country Life
Rural Vermont—a program for the future (1931), 383–384
Virginia
Agric. Exp. Sta. Bulletins. 1925–1932
240. Agric. situation in Roanoke and its trade territory (Vernon and Richards). (1925), 466
263. Market for milk in Richmond (Vernon and Kifer). (1928), 762
266. Adjustments of agric. production to meet home market demands in Clifton Forge–Covington trade area (Vernon, Johnson and O'Byrne). (1929), 466
275. Marketing fluid milk in four Virginia cities (Maxton and Taylor), 762
280. Manufacturing and marketing dairy products in Va. (Maxton). (1931), 762
285. Marketing Va. tobacco (Ballinger and Maxton). (1932), 762–763
West Virginia
Agric. Exp. Sta. Bulletins. 1924–1930
188. Adjusting agric. production and distribution in south central W. Va. to meet home market demands (Armentrout, *et al.*). (1924), 460
212. Adjusting agric. production in the Clarksburg area to meet home market demands (Armentrout). (1926), 461
226. Adjusting agric. production and distribution in the Beckley area to meet home market demands (Armentrout). (1930), 461
228. Adjusting agric. production and distribution in the Wheeling area to meet home market demands (Armentrout). (1930), 461

Govt. Studies: State (*cont.*)
Wisconsin
Agric. Exp. Sta. Bulletins. 1910–1929
198. Methods of renting farm lands in Wisc. (Taylor). (1910), 804–807
209. Prices of farm products (Taylor). (1911), 488–490
231. Marketing of Wisc. cheese (Taylor, Schoenfeld and Wehrwein). (1913), 553, 556, 662
238. Agric. cooperation (Hibbard). (1914), 555
247. Farm credit in Wisc. (Hibbard and Robotka). (1915), 930–934
251. Markets and prices of Wisc. cheese (Hibbard and Hobson). (1915), 555
256. Marketing of Wisc. potatoes (Taylor). (1915), 555, 556
270. Marketing of Wisc. butter (Hibbard and Hobson). (1916), 555
282. Cooperation in Wisc. (Hibbard and Hobson). (1917), 555
285. Marketing Wisc. milk (Hibbard and Erdman). (1917), 555
292. Price-fixing and the cost of farm products (Taylor). (1918), 407–408, 555
300. War prices and farm profits (Taylor and Mendum). (1919), 368, 370–371
314. Wisc. livestock shipping assns. (Hibbard, Foster and Davis). (1920), 659
316. Farm labor in Wisc. (Taylor and Black). (1920), 886
318. Credit needs of settlers in upper Wisc. (Ely, Hibbard and Cox). (1920), 867
322. Marketing by federations (Macklin). (1920), 660–661
346. Marketing by cooperative sales companies (Macklin). (1923), 661
367. Cooperative dairy marketing plans (Macklin). (1924), 661
380. Marketing Wisc. foreign cheese by federation (Bakken). (1926), 662
381. Marketing livestock cooperatively (Macklin and Schaars). (1926), 659
393. Tax burden compared, farm-city-village (Hibbard and Allin). (1927), 1013–1014
399. Tax delinquency in northern Wisc. (Hibbard, *et al.*). (1928), 868, 1018
406. Use and taxation of land in Lincoln Co., Wisc. (Hibbard, Hartman and Sparhawk). (1929), 868
Research Bulletins. 1911–1932
16. Place of economics in agric. research and education (Taylor). (1911), 121, 165, 278–280, 303, 864
44. Farm tenancy (Galpin and Hoag). (1919), 826–828
79. Practices . . . for economic costs of milk production on Wisc. dairy farms (Ezekiel, McNall and Morrison). (1927), 410–411
83. Farm costs and practices in production of Walworth Co. [Wisc.] crops and livestock (McNall and Ellis). (1928), 411
113. Economic study of Milwaukee milk market (Mortenson). (1932), 662
Special Bulletin
Possible farm tax reduction through changes in local government (Wehrwein and Allin). (1933), 1014–1015
Dept. of Agric. Bulletin
34. Wisc. agric. statistics (Becker). (1921), 252
Dept. of Agriculture and Markets
97. Land economic survey of northern Wisc. (Duffy, Whitson and Wehrwein). (1929), 864
100. Land economic survey of northern Wisc., Bayfield Co. (1929), 864
State Bd. of Public Affairs
Influence on policies involved in coordinating work . . . in field of agric. cooperation and marketing, 1913–1918, 557–563
Univ. of Wisc. Bulletins. 1904–1909
96. Decline of land-owning farmers in England (Taylor). (1904), 289, 351, 780–782
101. Agric. in Dane Co., Wisc. (Hibbard). (1904), 290–292
292. Wheat growing industry in Wisc. (Thompson). (1909), 292–294
Theses. Ph.D. 1902–1914
1902. Agriculture in Dane Co., Wisc. (Hibbard), 290–292
Decline of land-owning farmers in England (Taylor), 289, 351, 780–782
1907. Wheat growing industry in Wisc. (Thompson), 292–294
1910. Industrial history of Valley of Red River of the North (Coulter), 297–299

1911. Genesis and expansion of plantation system in the Southern States . . . during colonial period (Gray), 310
1912. Agrarian revolution in Georgia (Brooks). (1914), 299–302
1914. Agric. production in U. S., 1840–1860 (Falconer). (1914), 304
Wyoming
Agric. Exp. Sta. Bulletins
17, 22, 25. Cost and profit of growing wheat (Buffum). (1894–1895), 391
Graduate School of Agriculture, 83–84
Seven sessions held. *See* Educational Facilities
Graduate School U. S. Dept. of Agric.
See Educational Facilities, 604
Grain Futures Act, 616
Grain Futures Administration
Fluctuations in wheat futures. Sen. Doc. 135, 69th Congress (1926), 504
Grain Marketing Research
Harris, S. Methods of marketing the grain crop (1911), 570
Norton, L. J. and C. L. Stewart. Seasonal features of Ill. grain market (1929), 740–741
Rutter, F. R. European grain trade (1908), 525
Stewart, C. L., L. J. Norton and L. F. Rickey. Market destinations of Ill. grain (1928), 740
Grain Production
Brewer, W. H. The cereals. Rept. of cereal production of U. S. Census of Agriculture for 1880 (1883), 114, 124, 262, 264, 389–391
Rutter, F. R. Cereal production of Europe (1908), 525
Grain Standards
Fitz-Coulter grading plan; summary, 609–610
Grain standardization and its relation to marketing conditions (Duvel), 1913, 537
Minnesota issue, agreement reached; H. C. Taylor statement, 610–612
Review of problems involved, 606–614
U. S. Congress. House Committee on Agric. Hearings "Grades for Spring Wheat," 1921, 608–610
Grape Industry
Shear, S. W. and H. F. Gould. Economic studies of the grape industry [of Calif.] (1927), 471–472
Thomsen, F. L. and G. B. Thorne. Economic position of the grape industry in Mo. (1929), 476
Grass Seed Marketing Research
Card, D. G. Marketing of Ky. bluegrass and orchard grass seeds (1923), 719–720
Gray, A. (1810–1888)
Field work of L. H. Bailey under Gray, 347
Gray, L. C. (1881–)
Leader in field of land economics to 1939, 870
Mentioned, 302, 304
Works cited
Accumulation of wealth by farmers (1923), 942
Genesis and expansion of plantation system in Southern States of North America during the colonial period, 1911, 310
Objectives and methods in the local definition of the extensive margin in agric., 1930, 865
and E. K. Thompson
History of agric. in the Southern United States to 1860. 2 vols. (1933), 310–313, 342
Appraisals of History of agric. by H. C. Taylor and E. F. Gay, 311, 313
, O. E. Baker, *et al.* Utilization of our lands for crops, pasture and forest, 1923 (1924), 852, 862–863
, C. L. Stewart, *et al.* Farm ownership and tenancy, 1923 (1924), 850–852, 869
joint author. See Black, J. D., 867
Great Britain
Royal Commission on Agric., 1879. Preliminary rept. (1881), 389
Royal Commissions on Agric., 1879 and 1893, 335–336
Greathouse, C. H.
Historical Sketch of U. S. Dept. of Agric. (1898), 208
Green, R. M. (1889–)
Crop insurance problems (1936), 986–987
Effects of shortage of farm storage space and inability to get local bank credit on movement of Kans. wheat to market (1927), 725
Farm storage as a factor in marketing of Kans. wheat (1922), 724
Seasonal fluctuations of wheat prices [32 year series of monthly averages] (1925), 725
Training with Scoville, 378
and H. Howe. Year-to-year and seasonal fluctuations in hog prices (1926), 726
and E. A. Stokdyk. Judging price risks in marketing wheat (1927), 725–726
joint author. See Call, L. E., 614
Greenville, S. C.
Agric. production, consumption and marketing study of Greenville trade area (1927), 465
Gregg, W. E.
joint author. See Bartlett, R. W., 749

Gregory, A.
John Milton Gregory, a biography (1923), 58
Gregory, J. M. (1822–1898)
Influence of Gregory on T. F. Hunt, 64, 68, 69
John Milton Gregory, a biography (A. Gregory). (1923), 58
New political economy (1882), 64, 68, 69
Record of J. M. Gregory, 55–58
Grimes, W. E. (1891–1947)
Cost accounting conference, 1923, 428–432
Report on research work in farm management (1927), 375
, J. A. Hodges, *et al.* Study of farm organization in central Kans. (1925), 121, 437
Gross, I. H. and M. R. Bosworth
Insurance of farm families (1933), 988–989
Guthrie, E. S.,
joint author. See Black, J. D., 730–732

H

Haas, G. C.
Assigned to Division of Statistical and Historical Research, U. S. Dept. of Agric., 454
and M. J. B. Ezekiel. Factors affecting price of hogs (1926), 455, 503–504
Haecker, T. L.
Feeding value of forage crops, 399
Hail Insurance
See Insurance, 976–990
Hale, R. F.
Estimating local market prices and farm labor since 1920 (1939), 485
Hall, L. D.
Market classes and grades of meat (1910), 547
Hamer, O. S.
Master farmers of America and their education (1930), 161
Hammans, C. W.
joint author. See Nourse, E. G., 672–673
Hammond, B.
Free banking, 902–903
Hammond, J. H. (1807–1864)
Letter from Ruffin to Hammond, 343
Hammond, M. B. (1868–1933)
The cotton industry: essay in American economic history. Pt. 1. Cotton culture and cotton trade (1897), 287–289, 903–905
Review of Fairchild's Rural wealth and welfare, 1900 (1901), 72
Hanchett, W. H.
Wisc. State Bd. Public Affairs, 551
Handschin, W. F. (1880–1922)
Cost accounting work by Handschin in Ill., 1912–1922, 402
Farmers' financial accounts; specialty; introduced in Ill., 381
Harding, W. G. (1865–1923)
President of U. S.
Address before National Agric. Conference (1922), 580–581
Hare, B. B. (1875–)
South Carolina count system applied to cotton acreage in 1919, 241
Special methods of ascertaining acreages (1917), 234
Harlan, C. L. (1876–)
joint author. See Becker, J. A., 242, 246, 250–251, 252
Harper, F. A.
Cooperative purchasing and marketing organizations in N. Y. State (1932), 671–672
Harris, S.
Methods of marketing the grain crop (1911), 570
Harrison, Benjamin (1833–1901)
Mentioned, 859
Hart, A. B.
Disposition of our public lands (1887), 858
Hart, W. J., W. R. Fankhanel and F. L. Thomsen
Operating practices of Mo. cooperative elevators (1932), 703
Hartman, W. A. and J. D. Black
Economic aspects of land settlement in the cut-over region of the Great Lakes states (1931), 869
joint author. See Hibbard, B. H., 868, 1018
Harvard Univ.
Course in economics of agric. with special reference to Amer. conditions started in 1904 under T. N. Carver, 81
Hatton, W. H.
Wisc. State Bd. Public Affairs, 551, 553
Hauck, C. W.
Apple industry of Ohio (1928), 755
Farmers' produce markets in Ohio (1929), 666–667
Marketing cannery tomatoes on grade in Ohio (1932), 757–758
Hawthorne, H. W.
joint author. See Dixon, H. M. 368, 372–373, 374; Forster, G. W., 1016
Hays, W. M. (1859–1928), 75–77
Chief in charge Bureau of Statistics, U. S. Dept. of Agric., 1905–1906; succeeding J. Hyde; succeeded by V. Olmsted, 218, 225–227
College connections 1882/3–1892/3, 75–76
Crop Reporting Board established in 1905; composition of Board, expansion of reporting work, 225–227
Development of roots of agricultural economics in Minn., started by Hays, carried on by A. Boss, 79

Mentioned, 54
Specialties; crop rotation interest, 76
and E. C. Parker. Cost of producing farm products (1906), 394, 395, 397–398, 446
, A. Boss, A. D. Wilson and T. P. Cooper. Farm management: organization of research and teaching (1912). Also published as Bulletin 236, U. S. Plant Industry Bureau (1912), 76, 395
Hayward, H. (1869–1932)
Amer. Farm Management Assn. organization, 1910, 84, 85
Farm management work, Univ. of Del., 81
Hedging
Defined, 505
Hedrick, U. P. (1870–)
History of agric. in State of N. Y. (1933), 323–325
Hedrick, W. O. (1868–)
Marketing Mich. beans (1931), 746
joint author. See Newton, R. W., 1015; Scholl, C. A., 466
Heflebower, R. B.
Factors relating to prices of Idaho potatoes (1929), 467
Hemp
Humphrey, J. R. Marketing hemp (1919), 719
Henderson, B. (1878–1927)
Buying a farm in an undeveloped region (1924), 865–866
Farm lands available for settlement (1922), 865
Hendrickson, C. I.
joint author. See Davis, I. G., 375–376
Henney, H. J.
Factors influencing time of buying feeder steers (1932), 726
Henning, G. F.
Losses in shipping Ohio livestock (1929), 755
The truck and its relationship to livestock marketing in Ohio (1929), 756–757
Henry, W. A. (1850–1932)
Course in farm management at Univ. of Wisc., 1887/88, 77
Stimulated invention of cream test, 550
Herrick, M. T. (1854–1929) and R. Ingalls
Rural credits, land and cooperative, 1914, 1915 (1919), 860
Hess, R. H. (1877–)
joint author. Conservation of national resources, 860
joint author. Foundations of national prosperity (1917), 857
Hewes, F. W. and H. Gannett
Scribner's Statistical Atlas of the U. S., 1880, 315
Hibbard, B. H. (1870–)
Activities
Amer. Farm Management Assoc.; organization in 1910; advisor to Committee on Scope, 84, 85
Course in agric. economics at Iowa State College; special attention to marketing, 1904, 81
Lectures at Graduate School of Agric., 4th session (1910), 84
Part in setting direction of rural land economics, 870
Work at Wisc. begun by Ely and Scott carried on by Taylor and Hibbard, 79
Mentioned, 561, 562
Publications
Agric. cooperation (1914), 554, 555
Cooperation in the grain elevator business (1909), 663
Cooperative undertakings discussed at Amer. Econ. Socy. meeting, 1907, 82
Effects of Great War upon agric. in U. S. and Great Britain (1919), 137–138
Farm tenancy in U. S. (1912), 818–820
History of agric. in Dane Co., Wisc. Ph.D. Thesis Univ. of Wisc., 1902 (1904), 290–292
History of public land policies (1924), 303, 857–859, 991–992
Intensity of culture. *In his* Effect of the great war (1919), 137
Tenancy in the north central states (1911), 817–819
Utilization of land not in farms (1918), 862
and B. W. Allin. Tax burdens compared, farm-city-village (1927), 1013–1014
and H. E. Erdman. Marketing Wisc. milk (1917), 555
, L. G. Foster and D. G. Davis. Wisc. livestock shipping assn. (1920), 659
, W. A. Hartman and W. N. Sparhawk. Use and taxation of land in Lincoln Co., Wisc. (1929), 868
and A. Hobson. Coperation in Wisc. (1917), 555
Marketing farm produce by parcel post and express (1916), 555
Marketing of Wisc. butter (1916), 555
Markets and prices of Wisc. cheese (1915), 555
and F. Robotka. Farm credit in Wisc. (1915), 930–934
, J. Swenehart, W. A. Hartman and B. W. Allin. Tax delinquency in northern Wisc. (1928), 868, 1018
joint author. See Ely, R. T., 934
Hicks, J. D. (1890–)
Populist revolt (1931), 5
Higbie, E. C. (1875–)
Objective method for . . . secondary agric. education (1921), 159–161

Hilgard, E.
Agricultural survey in Miss., 342
Hill, F. F.
Analysis of loaning operations of Federal Land Bank of Springfield [Mass.] from its organization 1917 to 1929 (1932), 964–966
Hills, J. L. (1861–) and E. W. Allen
History of the Purnell Bill (1925), 601
Hinman, E. H. and J. O. Rankin
Farm mortgage history of eleven SE. Neb. townships, 1870–1932 (1933), 962
Historical and Geographical Approach to Study of Agric., 277–325
Hitchcock, F. H. (1869–1935)
Chief of Foreign Markets Section, U. S. Dept. of Agric.; appointment and service, 1897–1903, 514–516, 524
Hoag, E. F.
joint author. See Galpin, C. J., 826–828, 864
Hoard, W. D. (1836–1918)
Wisc. publisher
Hoard's Dairyman; Jefferson Co. Union, 296
Necessities and demands of modern dairying. *In* Mass. State Board of Agric. Ann. rept., 1895, 393
Hobson, A. (1889–)
International Institute of Agriculture (1931), 13, 17, 256–257
and J. B. Chaney. Sales methods . . . of a [cranberry] growers' national marketing agency (1923), 646, 647
joint author. See Hibbard, B. H., 555
Hodges, J. A. (1895–), R. S. Kifer and R. D. Nichols
Dairy farm organization in SE. Kans. (1931), 440
joint author. See Grimes, W. E., 121, 437
Hoffman, G. W.
Crop insurance — recent accomplishments and possibilities (1925), 984–985
Trading in corn futures, 1930, 504–505
joint author. See Duvel, J. W. T., 504
Hog Marketing Research
Dietrich, W. Market classes and grades of swine (1904), 547
Elliott, F. E. Adjusting hog production to market demands (1927), 741
Nordby, J. E. Type in market swine and its influence on pork (1932), 467
Wiley, J. R. Death and crippled losses in shipping hogs to market (1927), 752

AREA STUDIES

Indiana
Lloyd, O. G. and G. E. Young. Feeding and marketing of early spring pigs on Ind. farms (1927), 752
Wiley, J. R. Motor transportation of hogs to the Indianapolis market (1930), 752
Missouri
Richards, P. and F. L. Thomsen. Marketing stock hogs in Mo. (1930), 763–764
Hog Price Research
Gaston, T. L. Hog prices and the hog enterprise on Idaho farms (1932), 467
Green, R. M. and H. Howe. Year-to-year and seasonal fluctuations in hog prices (1926), 726
Haas, G. C. and M. J. B. Ezekiel. Factors affecting price of hogs (1926), 455, 503–504
Shepherd, G. S. *In his* Burden of increased costs of distribution (1932), 502–503
Holcomb, C. P.
Wheat crop of U. S. (1850), 174
Holman, C. W.
Participated in organization of Amer. Institute of Cooperation, 705–708
Holman, R. A.
Romance of Farmers' Grain Dealers Assn. of Iowa (1946), 678
Holmes, C. L. (1879–1938)
Agric. entrepreneurship (1932), 161
Cost Accounting Conference, 1923, 428–432
Economics of farm organization and management (1928), 153, 159
Wages of farm labor (1922), 887–889
Holmes, E. S., Jr.
Mentioned, 218
Holmes, G. K. (1856–1927)
Activities
In charge of Div. of Foreign Markets, U. S. Dept. of Agric. in 1903; had been with predecessor, Div. of Statistics, since 1895, 227, 524, 525, 526
Publications
Cotton crop of the U. S., 1790–1911 (1912), 173
Farmers' cooperation, 1901; unpubl. ms., 641
Meat supply and surplus (1907), 525
Nation's farm surplus (1903), 524
Peons of the South (1893), 30–31
Rural credit (rept. on first statistical survey by U. S. Dept. of Agric. on agric. credit conditions, 1912). (1913), 922–924
Special investigations (1917), 198, 208
Tenancy in the U. S. (1895), 773
Wages of farm labor (1912), 880–882

Work of H. A. Robinson as chief statistician U. S. Dept. of Agric. Div. of Statistics, 1893–1897, 207–208
and J. S. Lord. Farms and homes: proprietorship and indebtedness in U. S. 11th Census of U. S., 1890 (1896), 266, 267, 772, 773, 776, 779, 917, 918
Holt, B. A. and W. B. Combs
Judging creamery efficiency (1926), 733
joint author. See Black, J. D., 733
Home Market Studies
See Farm Management Research
Homestead Tax Exemption, 1016–1017
See Taxation, 991–1019
Honeycutt, A. J.
joint author. See Yoder, F. R., 954
Honeydews
See Cantaloupe Industry
Hops
Merritt, E. Hops in principal countries (1907), 525
Horner, J. T.
Detroit milk market (1928), 745
Marketing Michigan potatoes (1925), 744
joint author. See Clayton, C. F., 704–705
Horse Marketing Research
Davenport, E. Market classes of horses (1901), 547
Obrecht, R. C. Market classes and grades of horses and mules (1908), 547
Horticulture
Bailey, L. H. Extension work in horticulture; rept. (1896), 78, 348
Hoskyns, C. W.
Mentioned, 63
Houston, D. F. (1866–1940)
Secy. U. S. Dept. of Agric., 1913–1920, 229–230, 891, 921–922
Ann. rept., 1914 (1915), 615–616
Initiated seed loans, 921
Mentioned, 534
Statement; marketing of farm products (1913), 540, 542–544
Howard, J. R.
Pres. Amer. Farm Bureau Federation. Remarks at conference in office of Secy. of Agric., Feb., 1922, 587, 589–590
Howe, H.
joint author. See Green, R. M., 726
Huebner, S. S.
Functions of produce exchanges (1911), 568–570
Hughes, H. J.
Marketing problems of Minn. farmers (1920), 657–658
Hulbert, L. S.
Legal phases of cooperative assns. (1922), 646
Human Factor
See Qualities of men
Hume, A. N. and O. D. Center
Shrinkage of ear corn in cribs (1907), 547
Humphrey, J. R.
Marketing hemp (1919), 719
"Hunt Report," 90–96
Hunt, T. F. (1862–1927), 60–71
Activities
1880–1884. Student at Ill. Industrial Univ., 63
1884–1890. Asst. agriculturist, Ill. Agric. Exp. Sta., 63
1891. Prof. agric. courses, Penn. State College of Agric., 62, 64
1892–1903. Prof. rural economy Ohio State Univ., 62, 66–67, 80, 81, 356
1895–1910. Member Committee on Methods of Teaching Agric.; Assn. Amer. Agric. Colleges and Exp. Stas., 70
1899. Plan to organize a graduate school of agric., 71
1903. Tompkins Co. survey started at Cornell, 80
1903–1907. Prof. agronomy, Cornell Univ., 62, 63, 80, 356
1906. General survey of part of Tompkins Co. begun, 357
1907–1912. Penn. State College of Agric., 62, 81, 358
1911. Chrm. Subcommittee on Rural Economics and Farm Management, Amer. Assn. Agric. Colleges and Exp. Stas. Rept. (1911), 90–95
1912. Dean College of Agric. Univ. of Calif., 62
Comments on Hunt
Farm management planning, 433
Gregory tradition maintained by Hunt at Univ. of Ill., 60
Influence of J. M. Gregory on Hunt, 55, 64, 68
Influence of D. G. Mitchell on Hunt, 55
Labor income calculation initiated by Hunt, 358
Mentioned, 54
Publications about Hunt
Editorial. Exp. Sta. Record, vol. 56, (May, 1927), 61
Fippen, E. O. Dean Thomas F. Hunt: an estimate, 1944, 61
Publications by Hunt
"Farm papers," 1884/86, 63
How to choose a farm (1906), 80, 104–110, 146–147, 356, 433
Lecture notes. Quarterly of Alpha Zeta (1929), 61, 62
Lectures on history of agric. and rural economics (1899), 55, 63, 67–70, 356, 391

Hunt, T. F. (*cont.*)
Publications (*cont.*)
School of Agric. and Experiment Station in Penn. State College. Address (1899), 62
and W. H. Caldwell. Experiments with corn fodder (1892), 65
joint author. See Morrow, G. E., 60
Hunter, B. (1869–) and P. Eke
Method of determining what to produce (1932), 467–468
joint author. See Severance, G., 467
Hurrey, C. B.
Census methods, 1900, 272
Hutson, J. B. (1890–)
Farm budgeting (1928), 440–441
Progress in . . . budgeting method of planning in agric. economics. Ph. D. thesis, Columbia Univ. (1930), 441
joint author. See Forster, G. W.
Hyde, A. M. (1877–)
Secy. Agric. 1929–1933. Called nat'l. conference on land utilization in 1931, 855
Hyde, J. (1848–1929)
Activities
Chief statistician U. S. Dept. of Agric., Div. of Statistics, 1897–1905; succeeding H. A. Robinson, 208–217
Keep Commission membership activities, 220–225
Publications by Hyde
Ann. rept. as statistician, 1st, 1898, 209
Cotton acreage estimates of 1905 challenged by Amer. Cotton Manufacturers' Assn., 217–220
Rept. as special agent in charge of U. S. agric. census of 1890 (1895), 265–267

I

Idaho
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
Apple research, 467
Cherry orchards, 467
Dairy farming, 467
Farm management research. *See that title*
Hog enterprise
Gaston, T. L. Hog prices and the hog enterprise on Idaho farms (1932), 467
Potato situation, 467
Poultry farming, 467
Sugar beet farming
Moorhouse, L. A. and S. B. Nuckols. Cost of producing sugar beets in Utah and Idaho, 1918–1919 (1921), 423, 424
Illinois
Agric. Assn.
Protest to Ill. Tax Commission against increased land valuation for taxation, 1921, 997
Taxation of farm lands in Ill.; rept. (1922), 997
Agric. credit. *See* Farm Finance and Agric. Credit
Agric. Exp. Sta.
Asst. agriculturist, 1884–1890. T. F. Hunt, 63
Bulletins. *See* Government Studies, U. S. State Level
Apple industry. *See* Apple Marketing Research
Case demonstration method. Goddard interview, 380
Cooperative marketing research. *See that title*
Cost accounting operations
Method of Handschin, 1912–1922; continued by H. C. M. Case, 1922–1932, 381, 402–403
Production of corn and oats (Weston). (1898), 394
County study
Calhoun Co. Apples. *See* Apple Marketing Research
Extension work. *See that title*
Farm Bureau-Farm Management Service; origin in 1925; operation; leaders, 403
Farm management research. *See that title*
Farm ownership and tenancy. *See that title*
Fruit trade. *See* Fruit Marketing Research
Industrial Univ. (1867–1884)
Bd. of trustees, Ann. repts., 3d, 11th, 13th, 1869/70, 1880/82, 1884/86, 63
Circular and catalogue, 1876/77, 58
Course in agric. and faculty. *See* Educational Facilities
Regent, J. M. Gregory. *See* Gregory, J. M., record of, 55–58
Student, 1880–1884, T. F. Hunt, 63
Succeeded by Univ. of Ill. *See below*
Labor Statistics Bureau
Bienn. rept. 5th, 1888 (agric. credit data, 1870–1887), 910
Marketing research studies, 1925–1932; reviewed, 737–744
Rural banking conditions (Ill. Bankers' Assn.). (1914), 929
Taxation. *See* Taxation
Univ. of Ill.
Bd. of trustees, Repts., 13th, 14th, 1884/86, 1886/88, 58, 64
Catalogue and circular, 1885/86, 63
Imperial Valley, Calif.
Cantaloupe crop distribution, 634–635
Economic aspects of cantaloupe industry [of Imperial Valley] (Rauchenstein). (1927), 470
Mexican labor (P. S. Taylor), 890
Imports
See Foreign Trade
Indian Corn
Sugar beet competition, 116

Indiana
Agric. credit
See Farm Finance and Agricultural Credit
Agric. Exp. Sta.
Bulletins. *See* Government Studies, U. S. State Level
Apples. *See* Apple Marketing Research
County Studies
Clinton Co. Farm profits — figures for the same farms for a series of years; 100 farms, 1910, 1913–1918 (Dixon and Hawthorne). (1920), 368
Lake and Porter Cos. Study of farming changes as result of nearness to industrial cities (Robertson). (1932), 463–464
Northwestern Ind.; what is happening to agric. in? (Overton). (1928), 462
Variation in local marketing procedure (Robertson and Bonham). (1932), 463
Wayne Co. Production and marketing of farm products in (Overton and Edwards). (1925), 461
Farm management research. *See that title*
Farm ownership and tenancy. *See that title*
Hog market. *See* Hog Marketing Research
Home market adjustment. *See* Farm Management Research
Marketing research studies, 1927–1931, 752–753
Potatoes. *See* Potato Farming; Potato Marketing Research
Prices of farm products. *See that title*
Purdue Univ. *See* Purdue Univ.
Statistics and Geology Dept. Ann. rept. 1st, 1879 (agric. credit data, 1873–79), 909
Taxation. *See* Taxation
Univ. of Ind.
Course in "Economics of Agriculture." *See* Educational Facilities

Indianapolis, Ind.
Apple market (Cleaver, Cooper and Park). (1928), 753
Apple market, 1929–1930 (Gaylord and Cleaver). (1931), 753

Indigo
Production in U. S. eliminated, 315

Individual Action
Proposal; W. A. Peffer *in his* Agric. depression, 1894, 23

Industrial Commission Rept., U. S.
See Government Studies, U. S. Federal Level, 516–524, 556, 877–880

Industry
Schmidt, L. B. Importance of historical studies of specific industries. *In his* Economic history of Amer. agric. (1916), 280–282

Ingersoll, C. L. and S. W. Perin
Cost of farm crops, 1893, 391

Input-Output Study, 138, 442
See Farm Management Research

Input Requirements
Terminology. *See footnote,* 138

In-Service Training, 604
See also Educational Facilities

Institute for Research in Land Economics
Organization at Univ. of Wisc. in 1920; incorporation in 1922; removal to Northwestern Univ. in 1925, 848

Insurance, 976–990
Lewis, A. B. Fire insurance and fire losses on different classes of land, 1933, 983
Olsen, N. A., *et al.* Farm credit, farm insurance and farm taxation (1924), 944–946, 983, 1002
Social Science Research Council. Bulletin 14. Research in agric. insurance-scope and method (1932), 990
Valgren, V. N. Insurance and the farm risk problem (1944), 976, 989–990
Insurance needs of agric. Address (1931), 976
and E. E. Engelbert. Farm mortgage loans by banks, insurance cos. and other agencies (1921), 939–940

Insurance, classified
Cooperatives
Bartlett, R. W. Organization . . . of cooperative fire insurance cos. in N. Y. (1924), 982–983
Crop Insurance
Franklin's plan, 983–984
Green, R. M. Crop insurance problems (1936), 986–987
Hoffman, G. W. Recent accomplishments and possibilities (1925), 984–985
Secy. of Agric. rept., "Crop insurance." Sen. Doc. 190, 70th Congress, 986–987
Types of crop insurance program, 987
Valgren, V. N. Crop insurance: risks, losses and principles of protection (1922), 985–986
Wallace proposal (1922), 986
Crop Insurance — Cotton
Baggett, R. T. and W. H. Rowe. Suggested plan for cotton-crop insurance (1939), 987–988
Crop Insurance — Wheat
Rowe, W. H. Wheat crop insurance on actuarial basis project (1936), 987
Farm Families
Gross, I. H. and M. R. Bosworth. Insurance of farm families (1933), 988–989
Farmers' Mutual Fire Insurance
Valgren, V. N. Developments and problems in . . . (1928), 983

Insurance (*cont.*)
Farmers' mutual fire insurance (1916), 979–980
Historical sketch of . . . (1945), 976–978
Methods of farmers' mutuals (1933), 988
Organization and management of of a farmers' mutual fire insurance co. (1917), 980–981
Prevailing plans and practices among . . . (1919), 981
Suggestions for a state law providing for organization of . . . (1920), 981–982
System of records for local . . . (1920), 982
Hail Insurance
Hoffman, G. W. State government progress in providing hail insurance. *In his* Crop insurance — recent accomplishments (1925), 984–985
Valgren, V. N. Hail insurance on farm crops in U. S. (1920), 984
Livestock Insurance
Valgren, V. N. *In his* Methods of farmers' mutuals (1933), 988
AREA STUDIES
Minnesota
Valgren, V. N. Farmers' mutual fire insurance in Minn. (1911), 978–979
New York
Cooperatives. *See above*
Ohio
Morison, F. L. Ohio farm land acquired by life insurance cos. through foreclosures in 1929 (1930), 962–963
Intensity of Culture, 122–142
Brewer, W. H. *In his* Rept. of cereal production of U. S., U. S. Census. 10th, 1880 (1883), 124–125
Carver, T. N. *In his* Distribution of wealth (1904), 129–131
Course at Harvard, 1904, 81
Hibbard, B. H. *In his* Effects of the Great War (1919), 137–138
Jefferson, T. Letters to Washington, 1792, 122–123
Taylor, H. C. Increase. *In his* High prices and intensive farming (1918), 137
Introduction to the study of agric. economics (1905), 132
Statement. *In his* Syllabus of lectures on agric. economics (1903), 126–129
Tolley, H. R., J. D. Black and M. J. B. Ezekiel. Input as related to output in farm organization (1924), 138–140, 442–446
U. S. Census Bureau. Rept. on census of agric. 8th census, 1860 (1864), 123
Warren, G. F. Principle involved. *In his* Farm management (1913), 135–136
Washington, G. Letter to A. Young, Dec. 5, 1791, 122
Intensity of Culture, classified
Classical view, 125
Dairy farming requirements. *See* Dairy Farming
Diminishing returns law. *See* Law of Diminishing Returns
Maximum average return law. *See* Law of Maximum Average Return
Interest
Fetter, F. A. Relation between rent and interest (1903), 103
Peffer, W. A. Standardization of rates. *In his* Agric. depression, 1894, 25
International Conference of Agric. Economists
Proceedings, 1930, 865, 881
International Institute of Agriculture
Convention, 1905, 256
Created by David Lubin, 12
Hobson, A. International Institute of Agric. (1931), 256–257
International Yearbook of Agric., Statistics, 257
Precursor was International Statistical Institute, 193
International Statistical Institute
Bienn. meeting, 1st, 1887, Rome, attended by J. R. Dodge, statistician U. S. Dept. of Agric., 193, 254
Service of, 254
Iowa
Agric. Exp. Sta. Bulletins
See Government Studies, U. S. State Level
Governor, 1893–1894. *See* Boies, H.
Livestock. Statistics gathered by assessors, 237
Mortgages
Murray, W. G. Economic analysis of farm mortgages in Story Co., 1854–1931 (1933), 961–962
and F. L. Garlock. Farm mortgage debt in Iowa (1927), 960–961
State College of Agric.
Agric. economics; courses and faculty. *See* Educational Facilities
Banks and Banking
Garlock, F. L. Long term loans of Iowa banks (1930), 970–971
Cooperative Marketing Research. *See that title*
State University
Studies in education, vol. 6, no. 2. Hamer. Master farmers of America (1930), 161
Irrigation Economics, 830–847
Ely, R. T. Economics of irrigation; unpbl. rept., 1904, 830–837

Mead, E. Irrigation investigations of U. S. Dept. of Agric., 1899–1907, in charge of Mead, 830
Newell, F. H. Agric. by irrigation in western part of U. S. 11th U. S. Census, 1890 (1896), 266
Summary of irrigation economics research, 830–847
Taylor, H. C. "Duty of water." *In his* Economic problems in agric. by irrigation, 133
Economic problems in agric. by irrigation (1907), 133, 836–840
Teele, R. P. Economics of land reclamation in U. S. (1927), 842–847, 859
Reports on irrigation. Census of U. S. 13th, 1910, and 14th, 1920, 830
Review of ten years of irrigation investigation (1908), 840–842
Work of E. Mead and Teele in irrigation prior to 1919, 830
United States. Congress. Committee on Irrigation and Reclamation (House). Hearings . . . (1924), 863
Interior Dept. Committee of Special Advisors on Reclamation. Federal reclamation by irrigation, 1924, 863
Legislation. Significant laws cited, 859
Litigation. Johnson v. Little Horse Creek Irrigation Co. 79, Pac. 22, 835
Isaac, G. J.
Tax preference for homesteads (1939), 1017
Ise, J. (1885–)
U. S. forest policy (1920), 857

J

Jackson, C. D.
Trend and present status of rural tax delinquency (1938), 1018–1019
Jacobson, O. P. B.
Against grain standards, 610, 612
Jacobstein, M.
Farm credit in a northwestern state [North Dakota] (1913), 929–930
James, E. J.
Co-founder Amer. Economic Assn., 1885, 857
Jardine, W. M.
Crop insurance rept. Sen. doc. 190, 70th Congress, 986–987
Secy. Agric. U. S., 1925–1929, 595, 630
Jefferson, L. P.
Consumer demand for apples (1929), 729–730
Cost of marketing apple crop of 1923 (1925), 726–727
McIntosh apple on N. Y. market (1928), 729
Market outlook for Mass. apples (1927), 728–729
joint author. See Yount, H. W., 727–728
Jefferson, T. (1743–1826)
Letters to Washington, 1792–1793, 122–123
Jenks, J. W. (1856–1929)
Mentioned, 75
Jennings, R. D.
joint author. See Wilcox, R. H., 425
Jensen, W. C.
joint author. See Robinson, F. H., 465
Jesness, O. B. (1889–)
Cooperative marketing and price control (1926), 681–683, 719
Cooperative marketing of farm products (1923), 684
Cooperative marketing of tobacco (1928), 684–686
Marketing of tobacco (1928), 722–723
Mentioned, 161, 653
Price control analysis (1926), 681–683
, W. H. Barber, *et al.* Producers cooperative milk distributing plants (1922), 646
and D. G. Card. Marketing of Kentucky strawberries (1923), 678–679
joint author. See Jones, J. W., 646
Johnson, E. A.
joint author. See Johnson, E. C., 659
Johnson, E. C.
Farm mortgage foreclosures in Minn. (1932), 966–967
Ky. livestock auction sales organizations (1926), 720
Marketing Ky. livestock (1927), 720–721
and E. A. Johnson. Trucking livestock to South St. Paul (1931), 658–659
Johnson, E. R. (1864–)
Address Amer. Econ. Assn., 1896 (farm problem and transportation), 41–42
Johnson, H. S.
joint author. See Peek, G. N., 583–585
Johnson, O. M.
Index numbers of farm taxes in Ohio, 1880–1924, 1007
and B. W. Allin. Exemption of homesteads from taxation (1925), 1016–1017
Johnson, S. E. (1896–) and H. A. Steele
Aspects of farm mortgage situation in South Dakota and their relation to a future land use policy (1933), 967–968
joint author. See Critchfield, B. H., *et al.*, 466
Johnson, T. D.
joint author,. 465, 466
Johnston, P. E.
joint author. See H. W. Mumford, *et al.*, 466, 743

Joint Commission of Agricultural Inquiry
Rept., 1921–1922. *See* Government Studies, U. S. Federal Level
Jones, J. W. and Jesness, O. B.
Membership relations of cooperative assns. (cotton and tobacco). (1927), 646, 685
Jones, S. A.
Collaborator. *See* Murray, N. C., 228, 244
Jouzier, E.
Economie rurale (1903), 91, 92
Judd, Orange (1822–1892)
Statistics of production (1862), 176–178, 180, 185
Juve, O. A. (1883–)
Cost accounting conference, 1923, 428–432

K

Kahn, Otto
Remarks at conference in Office of Secy. of Agric. Feb., 1922, 586, 589
Kansas
Agric. Exp. Sta. Publications. *See* Government Studies, U. S. State Level
State Agric. College
Butter marketing. *See* Butter
Dairy farming. *See* Dairy Farming
Extension Circulars. *See* Government Studies, U. S. State Level
Extension work. *See* Extension Work
Farm management. *See* Farm Management Research
Fruit trade. *See* Fruit Marketing Research
Marketing research studies. *See* Marketing Research
Taxation. *See* Taxation
Wheat production cost. *See* Cost Accounting
Keeler, B. C.
Agric. indebtedness rept. and plans for 11th U. S. Census, 1890; co-participant, 266
History of demonetization (1896), 266
Organizer of Western Economic Assn., 266
Keep, C. H. (1861–1941)
Chm. of Committee on Department Methods, 220
Keep Commission
Repts. Sen. Doc. 464, 59th Congress (1906), 220–225
Kellar, H. A. (1887–)
Ed. Solon Robinson: Selected writings (1936), 388
Kelly, T. R.
joint author. See Adams, R. L., 889
Kelso, M. M.
Major trends in land utilization research in the U. S. (1941), 852–855
Kendrick, M. S.
Collection of general-property taxes on farm property in U. S. — emphasis on N. Y. (1928), 1009
Collection of taxes by State of N. Y. — division of these revenues with units, 1012–1013
Comparison of cost of maintenance of large and small county boards in U. S. (1929), 1010–1012
Kent, F. L. (1868–)
Relation of total acreage to acreage of particular crop and relation of increase or decrease of one crop to another, 1917, 234–235
Kentucky
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
Univ. of Ky.
Agric. organization in the U. S. (Wiest). (1923), 977
Kentucky, general
Cooperative marketing. *See* Cooperative Marketing Research
Egg market. *See* Egg Marketing Research
Grass seed. *See* Grass Seed Market
Livestock market. *See* Livestock Marketing Research
Marketing research studies, 1919–1928, 719–723
Poultry. *See* Poultry Marketing Research
Purchase Region
Progress . . . of budgeting method in planning agric. economics; illustrated with . . . study in the Purchase Region of Ky. (1930), 441
Strawberries. *See* Cooperative Marketing Research
Tobacco. *See* Tobacco Marketing Research
Keyes, H. F.
Took training with Scoville, 378
Kifer, R. S.
joint author. See Berger, A. C., 460; Hodges, J. A. and Vernon, J. J., 762
Kilgore, B. W. (1867–)
Mentioned, 632
Killebrew, J. B. (1831–1906)
Rept. on culture and curing of tobacco in the U. S. U. S. Census, 10th. Agriculture, 1880 (1883), 263
Killough, H. B.
Assigned to study price trends in U. S. Dept. of Agric., Division of Statistical and Historical Research, 454
What makes the price of oats (1925), 455, 503
Kincer, J. B. (1874–)
Precipitation and humidity (1922), 316–317

King, C. L.
Can the cost of distributing food products be reduced? 571
Price of milk (1920), 708–709
King, D. B.
American landlordism (1886), 771–772
King, Gregory (1648–1712)
Number of farmers by classes in 1688, 289, 351
King, W. I. (1880–) and L. E. Epstein
Member of committee on crop estimates, 1922, 240
National income and its purchasing power (1930), 459
Klemmedson, G. S.
joint author. See Forster, G. W., *et al.*, 1016
Knight, F. W.
re Cotton standards, 1923, 620, 621
Kraemer, E. and H. E. Erdman
History of cooperation in the marketing of Calif. fresh deciduous fruits (1933), 686, 689–691
Krumrey, H.
Cooperative marketing of cheese, 553–554, 558
Kuhlman, G. W. (1894–)
Study of tenancy in central Ill. (1927), 829
Kuhrt, W. J. (1895–)
joint author. See McKay, A. W., 646
Kyle, J. H.
Quoted about rept. of Industrial Commission, 517

L

Labor Cost
See Farm Labor
Labor Income
See Farm Management Research
Ladd, C. E. (1888–)
Cost accounting conference, 1923, 428–432
Cost accounts on some N. Y. farms, 1912–13 (1916), 412–415
La Mont, T. E.
Costs and returns in producing apples in the Newfane-Olcott area, Niagara Co., N. Y., 1926–1928 (1933), 359
Land Economics Research, 769–870
Ely, R. T. Ground under our feet (1938), 857, 859
"Intellectual progenitor of land economics: R. T. Ely." *In* Salter's Critical review of research in land economics (1948), 870
Landed property as an economic concept and as a field of research (1917), 857, 860–861
Fetter, F. A. Relations between rent and interest (1904), 858
Forests. *See* Forestry Economics
George, H. Progress and poverty (50th anniversary ed.), 857
German background of American land economists, 858
Gray, L. C. Objectives and methods in local definition of extensive margin in agric., 1930, 865
, O. E. Baker, *et al.* Utilization of our lands for crops, pasture and forest, 1923, 852, 862–863
, C. L. Stewart, *et al.* Farm ownership and tenancy, 1923, 850–852, 869
Henderson, B. Farm lands available for settlement (1922), 865
Hibbard, H. B. Utilization of land not in farms (1918), 862
Holmes, G. K. Farm tenancy in the U. S. (1895), 858
Institute for Research in Land Economics, Univ. of Wisc.; organization, 1920; incorporated 1922; moved to Northwestern Univ., 1925, 848
Irrigation. *See that title*
Kelso, M. M. Major trends in land utilization research in the U. S. (1941), 852–855
Land settlement; summary, 865–869
"Land utilization;" phrase defined and discussed, 862–865
Legislation. Significant federal laws cited, 859
Lovejoy, F. S. Theory and practice in land classification (1925), 864
Mead, E. Government aid and direction in land settlement, 862
National Conference on Land Classification. Proceedings (1940), 853
Overall review, 769–870
"Persons who played a part in setting direction of land economics," 870
Peters, A. H. Depreciation of farming land (1889), 909
Public interest in the land, 1870–1932, 856–870
Public lands. *See* Public Land
Reclamation. *See* Irrigation
Robbins, R. M. Our landed heritage (1942), 857
Roberts, I. P. Fertility of the land (1897), 101
Salter, L. A., jr. Critical review of land economics (1948), 852, 856–870
Soil research. *See that title*
Spillman, W. J. Work of Office of Farm Management relating to land classification and land revenue, 1917 (1918), 822, 861
Taylor, H. C. Factors related to land economics: fertility, location, valuation, rent. *In his* Introduction to Study of agric. economics (1905), 101–104
"The geographical method." *In* Wisc. Agric. Exp. Sta. Research Bulletin 16 (1911), 864

Land Economics Research (*cont.*)
Taylor, H. C. (*cont.*)
and G. S. Wehrwein. Richard T. Ely [land economist] (1943), 857
Tenure
Farm ownership and tenancy. *See that title*
"Land tenure is most significant new item in 10th Census of U. S.," 1880, 261
Status of farm land tenure problem in 1932, 870
Univ. of Wisc. leader in early development of land economics, 769
Turner, F. J. Significance of the frontier in Amer. history, 1893, 285, 857
Van Hise, C. R. Conservation of natural resources in U. S. (1910), 857
AREA STUDIES
Lake States
Black, J. D. and L. C. Gray. Land settlement and colonization in the Great Lakes States (1925), 867
Hartman, W. A. and J. D. Black. Economic aspects of land settlement in the cutover region of the Great Lakes States (1931), 869
Michigan
DeVries, W. The Mich. land economic survey (1928), 864
Smith, R. A. Land economic survey in Mich. (1926), 864
Minnesota
Land economic survey of Hubbard Co., Minn. (1935), 864
Peck, F. W. Experiences of northern Minn. settlers (1918), 866
New York State
Lewis, A. B. Methods used in economic study utilization in Tompkins Co., N. Y. (1934), 865
Message recommending survey of rural lands of the state. Governor Roosevelt, (1931), 865
Ohio
Minneman, P. G. Large land holdings and their operation in 12 Ohio counties (1929), 963
Morison, F. L. Ohio farm land acquired by life insurance cos. through foreclosures in 1929 (1930), 962–963
Wisconsin
Duffy, W. A., A. R. Whitson and G. S. Wehrwein. Land economic inventory of northern Wisc. [Bayfield Co.] (1929), 864
Ely, R. T., B. H. Hibbard and A. B. Cox. Credit needs of settlers in upper Wisc. (1920), 867
Hibbard, B. H., *et al.* Tax delinquency in northern Wisc. (1928), 868
Use and taxation of land in Lincoln Co., Wisc. (1929), 868
Landis, B. Y. (1897–)
Social aspects of agric. credit (1927), 958–959
Lang, E.
Law of the soil. Pt. 2 of Law of Diminishing Returns (Spillman and Lang). (1924), 141
joint author. See Spillman, W. J.
Lansing, Mich.
Scholl, C. A. and W. O. Hedrick. Lansing food survey (1930), 466
Larmer, F. M.
Financing the livestock industry (1926), 935
Larson, V. B.
joint author. See Galpin, C. J., 275
Laughlin, J. L. (1850–1933)
Causes of agric. unrest (1896), 37–39
Lauman, G. N. (1874–1944)
Amer. Farm Management Assn., organization participant 1910, 84
Committee on Scope, etc., adviser, 85–86
Comment on I. P. Roberts, 1939, 74
Courses in economics of agric. at Cornell; 1901, 1902, 79, 81
Rural economy. *In* Cyclo. Amer. Agric. 4 (1909), 90
Speaker at 2d session, Graduate School of Agric. at Cornell Univ., 1908, 83
Statement on his Cornell courses on rural economy antedating coming of Hunt in 1903, 1939, 356
Law of Diminishing Returns
Carver, T. N. Law of diminishing returns. *In his* Distribution of wealth (1904), 129–131
Germany, work done in, 141
Spillman, W. J. and E. Lang. Law of diminishing returns. Part 1. Law of diminishing increment (Spillman). Part 2. Law of the soil. (Lang). (1924), 140–141
Taylor, H. C. *In his* Syllabus of lectures (1903), 126–129
Law of Maximum Average
Taylor, H. C. *In his* Syllabus of lectures (1903), 127
Lebanon County, Penn.
Agric. production and marketing in (A. C. Berger, *et al.*). (1925), 460
Lebanon, town. Conn.
Soil type (Davis and Hendrickson). (1926), 375–376
Legislation
See Government Policies, U. S. Federal Level and same, State Level
Leigh, F. B.
Ten years on a Georgia plantation since the war (1883), 300
Leith, C. K. (1875–)
joint author with R. T. Ely, 857

Lemmer, G. F.
Agric. program of a leading farm periodical, Colman's Rural World, 8
Norman, J. Colman and Colman's Rural World: study in agric. leadership, 1947, 8
Lescohier, D. D. (1883–)
Conditions affecting demand for harvest labor in the Wheat Belt (1924), 896
Harvest labor problems in the Wheat Belt (1922), 895–896
Lewis, A. B.
Fire insurance and fire losses on different classes of land (1933), 983
Methods used in economic study of land utilization in Tompkins Co., N. Y. (1934), 865
Lewis, D. J. (1860–)
Parcel post marketing of farm products proposed by Congressman from 6th Maryland District, 1913, 541
Lewiston Orchards, Idaho
See Cherry Orchards
Liebig, J. V.
Mentioned, 141
Lininger, F. F.
Egg marketing by farmers in Penn. (1927), 750–751
Potato marketing in Penn. (1932), 751
Relation of basic-surplus marketing plan to milk production in the Philadelphia milk shed (1928), 749
Study of egg and poultry consumption in Penn. (1928), 751
Livermore, K. C. (1886–)
Cornell Univ. studies of successful farms found by survey work (1913), 365
joint author. See Warren, G. F., 147, 808
Livestock Estimates
See also Livestock Reporting, 246–251
Crop and livestock estimates; summary, 169–257
Pigs. *See* Pig Production Estimates
Rural mail carriers, use of, 246–249
Status of in 1917, 235
Livestock Farming
Beef cattle fattening cost. *See* Cost Accounting
Boss, A., F. W. Peck and T. P. Cooper. Labor requirements of livestock (1916), 415–419
Cattle loans. *See* Cattle Loans
Cooperatives. *See* Cooperative Marketing Research
Dale, E. E. Range cattle industry (1930), 321
Financing. *See* Farm Finance and Agric. Credit
International Livestock Exposition, Chicago, 1924; address by President Coolidge, 452
Labor requirements. *See* Farm Labor
Nutrition. *See* Corn Fodder
Sheep. *See* Sheep

AREA STUDIES

Minnesota
Sallee, G. A., G. A. Pond and C. W. Crickman. Economic study of livestock possibilities in the Red River Valley of Minn. (1931), 439
North Carolina
Saville, R. J. Systems of livestock farming for the mountain region of N. C. (1928), 440
Ohio
Ohio Stock Breeders' and Farmers' Institute. Proceedings (1894), 393
Wisconsin
McNall, P. E. and L. S. Ellis. Farm costs and practices in the production of Walworth Co. [Wisc.] crops and livestock (1928), 411
Livestock Marketing Research
Cooperatives. *See* Cooperative Marketing Research
Henney, H. J. Factors influencing time of buying feeder steers and of selling them as choice summer-fed steers (1932), 726
Hog Market. *See* Hog Marketing Research
Mumford, H. W. Market classes and grades of cattle with suggestions for interpreting market quotations (1902), 547, 548–549
Sheep. *See* Sheep
Slater, D. J. Market classes and grades of cattle (1927), 713

AREA STUDIES

Illinois
Ashby, R. C. Truckage rates; shipping Ill. livestock (1930), 741
Kentucky
Johnson, E. C. Marketing Ky. livestock (1927), 720–721
Ky. livestock auction sales organizations (1926), 720
Minnesota
Johnson, E. C. and E. A. Johnson. Trucking livestock to South St. Paul (1931), 658–659
Missouri
Thomsen, F. L. and W. R. Fankhanel. Livestock trucking in Mo. (1932), 764
Ohio
Henning, G. F. Losses in shipping Ohio livestock (1929), 755–756
The truck and its relationship to livestock marketing in Ohio (1929), 756–757

Livestock Prices
Peffer, W. A. *In his* Agric. depression, 1894 (1895), 23
Livestock Reporting
Decentralization of crop and livestock reporting effectuated, 1927–1932, 253–254
Developments in crop and livestock reporting since 1920. (Becker and Harlan). (1939), 242, 246, 251, 252
Market-reporting service of U. S. Bureau of Markets inaugurated in 1918, 713
Statistics gathered by assessors for Wisc., Ohio, Neb., Iowa, Kans. and Mo., 237
U. S. Dept. of Agric., various agencies, 1862–1893, 179–199
Livingston County, N. Y.
See New York State
Livingston, G. (1886–)
Chief of Office of Markets, U. S. Dept. of Agric., 1919–1921, 546
Memorandum to Secy. of Agric., 1920, 633
Nominated Assoc. Chief of new B.A.E., 1921, 603
U.S.D.A. Annual rept., 1920 (1921), 546
Livingston, L. F. (1832–1912)
Member Committee on Monetary System, National Farmers' Alliance; rept., 1889, 6
Lloyd, J. W. (1876–)
Marketing Calhoun Co. [Mo.] apples (1928), 742
Marketing the muskmelon (1908), 547, 548
Observations on refrigeration of some Ill. fruits in transit (1929), 743
and H. M. Newell. Causes of damage to fruits and vegetables during shipment (1932), 743
Factors influencing keeping qualities of fruit in transit (1930), 743
Lloyd, O. G. (1884–)
Cost accounting conference, 1923, 428–432
Farm leases in Iowa (1915), 811–812
and G. E. Young. Feeding and marketing of early spring pigs on Ind. farms (1927), 752
joint author. See Wilcox, W. W., 161
Local Government
Hibbard, B. H. and B. W. Allin. Tax burdens compared, farm-city-village (1927), 1013–1014
Kendrick, M. S. Collection of taxes by State of N. Y. — division of these revenues with units of local government (1930), 1012–1013
Comparison of cost of maintenance of large and small county boards in U. S. (1929), 1010–1011
Wehrwein, G. S. and B. W. Allin. Possible farm tax reduction through changes in local government (1933), 1014–1015
Loehr, R. C.
Mentioned, 322
Logan, E. A. (1872–)
Credited with "ratio to land" approach to acreage estimates, 244
Logan, J. H.
History of upper country of S. C. Vol. 1 (1859), 286
[London] Times
Sponsor for Caird's survey resulting in his English agriculture in 1850–1851 (1852), 333
Loomis, R.
Cooperative livestock shipping assns. in Mo. (1923), 700–701
Lord, J. S.
joint author. See Holmes, G. K., 266, 267, 772, 773, 776, 779, 917, 918
Loring, F. W. and C. F. Atkinson
Cotton culture and the South (1869), 288
Louisiana
Agriculture. Louisiana agricultural progress and opportunities (B. H. Critchfield, *et al.*) Part 1–5 (1926), 466
Agric. Extension Division. Extension Circulars. *See* Government Studies, U. S. State Level
City studies. *See* Shreveport
Extension work. *See* Extension Work
Home market studies. *See* Farm Management Research
Lovejoy, P. S.
Theory and practice in land classification (1925), 864
Lovering, W. C. (1837–1910)
Mentioned, 219
Lowden, F. O. (1861–1943)
Presidential address, Amer. Country Life Conference, 1930 (1931), 478–479
Lubin, D. (1849–1919), 53
Creator of International Institute of Agriculture, 12
Discussed, 254
Export bounty plan, 14, 15
Freight rates, 12–13
Operations, 1884–1897, 12–18
Prize essays inaugurated, 1894. "Protection and the Farmer," 16–18
Prize essays, 1896–1897, 45–49
Wheat price plan, 14
Works about Lubin
Agresti, O. R. David Lubin's study in practical idealism (1922), 13, 16, 18, 255–257
Works by Lubin
New political issue (1894), 15
Protection for agric. staples by an export bounty (1896), 16

M

Macdonald, J. (1852-1913)
Food from the far West or American agriculture (1878), 334–335
Machmer, W. L.
joint author. See Cance, A. E., 563
Macklin, T. (1889–)
Cooperative dairy marketing plans (1924), 661
Marketing by cooperative sales companies (1923), 661
Marketing by federations (1920), 660–661
Marketing of Kans. butter (1917), 565
and M. A. Schaars. Marketing livestock cooperatively (1926), 659–660
Macune, C. W.
Member of Committee on Monetary System, Farmers' Alliance; rept., 1889, 6
Malone, W. H.
Taxation of farm lands, 997
Maps
Grain surplus regions and markets mapped in Industrial Comm. rept., 556–557
Spillman, W. J. Farm grasses of U. S., 1905; dot map feature, 303
Taylor, H. C. Interest in dot maps of crop and livestock density and distribution, 303
Market News Service in B.A.E., 633–636
Marketing Farm Products, 483–765
Marketing Research, 710–765
American Academy of Political and Social Science. Reducing cost of food distribution. Annals. Vol. 50 (1913), 571
American Society of Equity. Influence on policies involved in . . . work of . . . groups in field of . . . marketing, 1913–1918, 557–560
Bercaw, L. O. and E. M. Colvin. Bibliography on marketing of agric. products, 1924–1931 (1932), 711
Boyle, J. E. Marketing of agric. products (1925), 733
Coulter, J. L. Problems of agric. marketing, 1908, 83
Crowell, J. F. Distribution of farm products. U. S. Industrial Comm. Repts. Vol. 6 (1901), 516–524
Dept. of Agric. Secy. of Agric. (Houston); statement (1913), 542–544
Gephart, W. F. Grading and standardization in marketing foods (1919), 571
Joint Commission of Agric. Inquiry. Rept. Pt. 4. Marketing and distribution (1922), 572–576
King, C. L. Can the cost of distributing food products be reduced? (1913), 571
National Agric. Conference, Jan., 1922. Committee on Marketing, rept., 577–579
National Assn. of State Marketing Officials. Organization meeting, 1920. Proceedings, 764–765
National Conference on Marketing and Farm Credits. 1st, Chicago, April 8–10, 1913. Address of President Univ. of Wisc., C. R. Van Hise; summary, 559
1st–4th, 1913–1916. Proceedings, 567
Scofield, C. S. Economics of crop disposal (1913), 534–535
Sherman, C. B. Legal basis for marketing work of U. S. Dept. of Agric., 1917, 532–533, 542, 545, 546
Southern States Assn. of Markets. Proceedings, 1914. Resolution in favor of a market news service and cooperative marketing agencies, 567–568
Teele, R. P. Agric. marketing. Paper; Amer. Economic Assn., 1907, 82
United States. Congress (61st–63rd). Interest in proposals for a Bureau of Markets; legislation, committee reports and hearings, 1910–1913; reviewed, 526–534
United States. Dept. of Agric. Bureau of Markets, Market News Service; extension of leased wire system, use of radio, etc., 633–636
Dept. of Agric. Conferences, 1913, March 27. Rept., 1913, 535–541
1913. April 29, 540–541
1922. Feb. 13. Proceedings, 584–590
Dept. of Agric. Dairy Division. Marketing work of Div. (1913), 536
Dept. of Agric. Marketing services of the Dept., 1921–1932, 601–640
Dept. of Agric. Repts. 98. Systems of marketing farm products and demand for such products at trade centers, 1913, 532
Summary; C. B. Sherman, 532–533
Warren, G. F. Relation of farm management and marketing to economics (1922), 669
Marketing Research, classified
Beans. Hedrick, W. O. Marketing Mich. beans (1931), 746
Cabbage. *See* Cabbage Marketing
Cantaloupes. *See* Cantaloupe Industry
Cheese. *See* Cheese Marketing
Foreign trade. *See that title*
Government marketing activities, 1893–1920, 510–546
Grain. *See* Grain Marketing Research
Grass seed. *See* Grass Seed Marketing
Hemp. *See* Hemp

Marketing Research (*cont.*)
Home market adjustments. *See* Farm Management Research
Hops. *See* Hops
Marketing research, 1921–1932; review, 710–765
Marketing work in agric. colleges prior to 1921, 547–566
Parcel post
Hibbard, B. H. and A. Hobson. Marketing farm produce by parcel post and express (1916), 555
Lewis, D. J. Parcel post marketing of farm products proposed, 1913, 541
Peaches. *See* Peach Marketing Research
Specialists; Hibbard, 1904, 81
Standardization. *See that title*
Tobacco. *See* Tobacco Marketing Research
Truckage
Ashby, R. C. Truckage rates, shipping Ill. livestock (1930), 741
Henning, G. F. The truck and its relationship to livestock marketing in Ohio (1929), 756
Johnson, E. C. and E. A. Johnson. Trucking livestock to South St. Paul (1931), 658–659
Motts, G. N. Motor truck marketing of Mich. fruits and vegetables (1932), 747
Wiley, J. R. Motor transportation of hogs to Indianapolis market (1930), 752
Wheat. *See* Wheat Marketing Research
Wholesale Markets
Crowell, J. F. What makes wholesale market prices? *In the* Distribution of farm products. *In* Rept. of the Industrial Commission . . . v. 6 (1901), 521–522
AREA STUDIES
Mumford, H. W., *et al.* Developmental study of a rural-urban trade area (1929), 466, 743
California
Marketing research studies, 1929–1931, 753–755
Illinois
Marketing research studies, 1925–1932, 737–744
Indiana
Marketing research studies, 1927–1932, 752–753
Kansas
Marketing research studies, 1920–1932, 723–726
Montgomery, G. Marketing work at Kans. State College prior to 1932, 723–724
Kentucky
Marketing research studies, 1919–1928, 719–723
Massachusetts
Marketing research studies, 1925–1929, 726–730
Michigan
Hedrick, W. O. Marketing Mich. beans (1931), 746
Marketing research studies, 1925–1932, 744–747
Minnesota
Marketing research studies, 1924–1929, 730–733
Missouri
Marketing research studies (1930), 763–764
Ohio
Marketing research studies, 1929–1932, 755–758
Pennsylvania
Marketing research studies, 1926–1932, 747–752
Texas
Gabbard, L .P. Agric. economic survey of Rockwell Co., Tex. (1925), 758–760
Marketing research studies, 1925–1928, 758–761
Virginia
Marketing research studies, 1928–1932, 761–763
Wisconsin
Origin in 1911; interest in field of cooperation and marketing, 551
Univ. of Wisc. contributions to marketing problems prior to 1900, 550
Wisc. State Bd. of Public Affairs. Action on policies involved in coordinating work of groups in field of cooperation and marketing, 1913–1918, 557–563
Marketing Services, 601–640
Marquis, J. C. (1881–)
Agric. History Bibliography (1907)
Director economic information, B.A.E., 1922–1935. *See* Capper, A.
Marschner, F. J.
joint author on land utilization, 852, 863
Marshall, W. (1745–1818)
Influenced Ruffin, 343
Rural economy of Norfolk: . . . management of landed estates and practice of husbandry in . . . (1787), 330–331
Young, A. and Marshall contrasted, 331–332
Maryland
Representative in Congress, 6th Md. District, 1911–1917, 1931–1937. *See* Lewis, D. J.
State Agric. Society, President, J. T. Earle. Letter to agric. societies of other states, 1855; publication of crop statistics, 175

Mason, C. (1804–1882)
Circular, 1856, requesting crop and related statistics, 176
Crop production statistics decentralization proposal, 1856, 175, 253
Massachusetts
Agric. College. *See* Educational Facilities
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
State Bd. of Agric. Ann. rept. *See* Government Studies, U. S. State Level
Apple industry and marketing. *See* Apple Marketing Research
Farm labor. *See* Farm Labor
Marketing research studies, 1925–1929, 726–730
Matthews, N., jr. (1854–1927)
Double taxation of mortgaged real estate (1890), 777
Maxton, J. L.
Manufacturing and marketing dairy products in Va. (1931), 762
and C. C. Taylor. Marketing fluid milk in four Va. cities (1931), 762
joint author. See Ballinger, R. A., 762–763
Mayer, A.
Mentioned, 141
McBride, C. G. (1886–)
Development of market milk areas in northeastern Ohio (1930), 758
joint author. See Sherman, R. W., 758
McCandless, D. A. (1891–)
Count system applied to cotton acreage in Miss.; mechanical device attached to automobile, 241
McCarthy, C. (1873–1921)
Legislative reference librarian, State of Wisc., 551, 554, 558
McComas, E. W. (1894–)
joint author. See Wilcox, R. H., *et al.*
McCullock, M. E.
Amer. Farm Management Assn.; organization participant, 1910, 84
McDonald, J.
See Macdonald, J.
McDonald, W. F.
joint author. See Critchfield, B. H., *et al.*
McGillivray, J. H.
joint author. See Gaylord, F. C., 639
McGovern, F. E.
(Governor of Wisc.) Wisc. State Bd. Public Affairs (1913), 551, 553, 559
McGuire, A. J. (1874–)
Development of the cooperative creamery in Minn., 1925, 707–708
McKay, A. W. (1883–)
Operating methods and expense of cooperative citrus fruit marketing agencies (1924), 646
Organization and development of a cooperative citrus fruit marketing agency (1924), 646
and W. J. Kuhrt. Management problems of cooperative assns. marketing fruits and vegetables (1926), 646
McKinley, Wm. (1843–1901)
Mentioned, 859
McMillan, H. C.
Rural credits or how to finance the farmer (1916), 920
McNall, P. E. and L. S. Ellis
Cost accounting conference, 1923, 428–432
Farm costs and practices in production of Walworth Co. [Wisc.] crops and livestock (1928), 411
Trained in farm management extension, 378
joint author. See Ezekiel, M. J .B., 410
McVey, F. L. (1869–)
Populist movement (1896), 907
Mead, E. (1858–1936)
Government aid and direction in land settlement (1918), 862
Irrigation investigations of U. S. Dept. of Agric., 1899–1907, in charge of Mead, 830
Work of Mead and R. P. Teele in irrigation prior to 1919, 830
Meat Industry
Gardner, K. B. Margins, expenses and profits in retailing meat (1926), 713
Hall, L. D. Market classes and grades of meat (1910), 547
Holmes, G. K. Meat supply and surplus; consideration of consumption and exports (1907), 525
MacDonald, J. British-American competition. *In his* Food from the far West (1878), 334–335
Nordby, J. E. Type in market swine and its influence on quality of pork (1932), 467
Meat Packing Industry
American Institute of Meat Packers suggests importance of studies to B.A.E., 713
Peffer, W. A. *In his* Agric. depression, 1894, 21, 23
Mehl, J. M. (1886–)
Cooperative grain marketing (1921), 646
Melvin, A. D.
Marketing work plans conference, 535
Mendum, S. W. (1888–)
Cost of milk production on 48 Wisc. farms (1923), 408–410
Farm management demonstration work in Wisc., 1919, 381
and Taylor, H. C. War prices and farm products (1919), 368, 370–371
Menefee, E. R.
Marketing of eggs on a graded basis (1929), 639–640

Meredith, E. T. (1876–1928)
Secy. of Agric., U. S., 1920–1921; letter to Oklahoma farmer, 1920, 237–239
Merritt, E. (1880–)
Hops in principal countries (1907), 525
Metzger, H.
Cooperative marketing of fluid milk (1930), 646, 647–648
and H. B. Price. Economic aspects of local elevator organization (1929), 733
Mexican Labor
Taylor, P. S. Mexican labor in the U. S. (1928–1932), 890
Michigan
Agric. College. *See* Educational Facilities
Agric. Exp. Sta. Publications. *See* Government Studies, U. S. State Level
Apples, consumer demand (Gaston). (1931), 745
Bureau of Labor and Industrial Statistics. Ann. rept. 5th, 1887/88 (farm mortgage indebtedness), 911–912
City Studies
Detroit; milk market (Horner). (1928), 745
Lansing; food survey (Scholl and Hedrick). (1930), 466
Cooperative buying and selling organizations (Clayton and Horner). (1928), 704
Dairy farms. *See* Milk Production
Farm mortgage indebtedness. *See* Mortgages
Home market studies. *See* Farm Management Research
Land economics. *See* Land Economics Research
Marketing research studies, 1925–1932, 744–747
Potatoes. *See* Potato Marketing Research
Taxation. *See* Taxation
Univ. of Mich. Participation in Lubin's export bounty prize essay proposal, 1894, 16
Vegetables. *See* Vegetable Marketing Research
Milk Marketing Research
Bartlett, R. W. Price plan for selling milk by collective bargaining organizations (1930), 749
Fraser, W. J. City milk supply (1903), 547
Schoenfeld, W. A. Some economic aspects of marketing milk and cream in New England (1927) 712–713
Stern, J. K. Membership problem in a milk marketing organization (1930), 750
Tucker, C. K. Cost of handling fluid milk and cream in country plants (1929), 736–737
Milk Marketing Research, classified
CITY STUDIES
Canton, Ohio
Chicago, Ill.
Cincinnati, Ohio
Columbus, Ohio
Dayton, Ohio
Los Angeles, Calif.
Milwaukee, Wisc.
New York City, N. Y.
Philadelphia, Penn.
Richmond, Va.
See below Area Studies, names of states
Cooperatives. *See* Cooperative Marketing Research
AREA STUDIES
California
Spencer, L. Economic survey of Los Angeles milk market (1931), 754–755
Illinois
Brown, C. A. Cost and margins . . . in distribution of fluid milk in four Ill. market areas (1928), 738–739
Ross, H. A. Marketing of milk in Chicago dairy district (1925), 737–738
Trueman, J. M. Milk supply of Chicago and 26 other cities (1907), 547
Michigan
Horner, J. T. Detroit milk market (1928), 745
New York
Catherwood, M. P. Statistical study of milk production for the N. Y. [City] market (1931), 736
Norton, L. J. and L. Spencer. Preliminary survey of milk marketing in N. Y. (1925), 735
Ross, H. A. Demand side of N. Y. milk market (1927), 735–736
Supply side of N. Y. [City] milk market (1931), 736
Ohio
McBride, C. G. Development of market milk areas in northeastern Ohio (1930), 758
Sherman, R. W. and C. G. McBride. Market analysis of farm sales of milk to dealers in four Ohio cities, 1925–1929 (Cincinnati, Dayton, Columbus, Canton). (1932), 758
Pennsylvania
Bartlett, R. W. Milk marketing in Penn. (1926), 747–749
and W. E. Gregg. Milk marketing in Penn. (1928), 749

Lininger, F. F. Relation of basic-surplus marketing plan to milk production in Philadelphia milk shed (1928), 749–750
Virginia
Maxton, J. L. and C. C. Taylor. Marketing fluid milk in four Va. cities [1931], 762
Vernon, J. J. and R. S. Kifer. Market for milk in Richmond (1928), 762
Wisconsin
Hibbard, B. H. and H. E. Erdman. Marketing Wisc. milk (1917), 555
Mortenson, W. P. Economic study of Milwaukee milk market (1932), 662
Milk Price
Bartlett, R. W. Price of milk. *In his* Milk marketing in Penn. (1926), 747–749
Price plan [Pittsburgh equalizing price plan] for selling milk by collective bargaining organizations (1930), 749
King, C. L. Price of milk (1920), 708–709
Pearson, F. A. Principles involved in fixing price of milk (1919), 494
Milk Production
(*See also* Dairy Farming)
Cooper, M. O., G. M. Bennett and L. M. Church. Study in cost of producing milk on four dairy farms in Wisc., Mich., Penn. and N. C. (1917), 420–421
Estimates, on sample data basis, begun in 1920's; development through 1931, 251
Ezekiel, M. J. B., P. E. McNall and F. B. Morrison. Practices responsible for variations in physical requirements and economic costs of milk production on Wisc. dairy farms (1927), 141, 410–411
Mendum, S. W. Cost of milk production on 48 Wisc. farms (1923), 408–410
Peck, F. W. and A. Boss. Cost of milk production (1918), 419–420
Mill, J. S. (1806–1873)
Mentioned, 71, 154
Miller, R. N.
Farm management extension training with Scoville, 378
Milling Industry
Peffer, W. A. *In his* Agric. depression, 1894, 21
Milwaukee, Wisc.
Milk market (Mortenson). (1932), 662
Minneman, P. G.
Large land holdings and their operation in 12 Ohio counties (1929), 963
Minnesota
Agric. College. *See* Educational Facilities
Agric. Exp. Sta. Ann. rept. of director (Woods), 1912, 549
Bulletins. *See* Government Studies, U. S. State Level
Bureau of Labor. Bienn. rept. 4th, 1893/4 (farm mortgage debt and foreclosures, 1859–1893). (1895), 914–916
Bureau of Research in Agric. Economics (1911–1913). Creation and purpose of Bureau, 549
Director. C. W. Thompson, 550
Dept. of Agric. Bulletins. *See* Government Studies, U. S. State Level
Division of Research in Agric. Economics (1913–)
Chief. L. D. H. Weld, 550
Formerly designated Bureau, 550
Legislature. *See* Government Policies, U. S. State Level
University of Minn. Publications. *See* Government Studies, U. S. State Level
Minnesota, general
Agricultural history
Robinson, E. V. Early economic conditions and development of agric. in Minn. (1915), 282
Cooperative marketing research. *See that title*
Cooperatives
McGuire, A. J. Cooperative creameries, 1925, 707–708
Cost accounting studies. *See* Cost Accounting
County studies
Hubbard Co., land survey (1935), 864
Dairy farms. *See* Dairy Farming
Farm management research. *See that title*
Farmers' mutual fire insurance. *See* Insurance
Land economics. *See* Land Economics Research
Livestock. *See* Livestock Farming
Marketing research studies, 1924–1929, 730–733
Mortgage foreclosures. *See* Mortgages
Red River Valley
Coulter, J. L. Industrial history of the valley of the Red River of the North (1910), 297–299
Pond, G. A., G. A. Sallee and C. W. Crickman. Planning systems of farming for the Red River Valley of Minn. (1931), 439
Red River Valley, economic study of livestock possibilities (1931), 439
Red River Valley, crop production possibilities (1931), 439

Misner, E. G. (1891–)
Marketing of cabbage (1925), 734
Mississippi
Cost of cotton grown; 1920 records, 423
Senator from Miss. *See* George, J. Z.
Missouri
Agric. Exp. Sta.
Bulletins. *See* Government Studies, U. S. State Level
Univ. of Mo. *See* Educational Facilities
Missouri, general
Butterfat
Thomsen, F. L. and W. H. E. Reid. Developing new markets for Mo. butterfat (1929), 702
Cooperative marketing research. *See that title*
Creameries. *See* Cooperative Marketing Research
Elevators. *See* Elevator Management
Farm survey work in Mo., 1908–1910 (Doane), 81
Grape industry. *See* Grape Industry
Hog farming. *See* Hog Marketing Research
Livestock. *See* Livestock Marketing Research
Marketing research studies, 763–764
Strawberries. *See* Cooperative Marketing Research
Vegetables. *See* Cooperative Marketing Research
Wheat, cost of production in 1920. Ann. rept. U. S. Dept. of Agric. Office of Farm Management and Farm Economics, 423
Mitchell, D. G. (1822–1908)
My farm of Edgewood (1863), 55
Wet days at Edgewood (1864), 55, 63
Works. Vol. 6. My farm of Edgewood (1907), 385
Mitchell, W. C.
Outlook conference, 1923, 449
Mitscherlich, E. A.
Mentioned, 141
Moffat, E. J.
Mentioned, 192
Mohler, J. R. (1875–)
Member of economic council, 602
Montana
Agric. Exp. Sta. Publications. *See* Government Studies, U. S. State Level
Elevator management. *See that title*
Wheat marketing. *See* Wheat Marketing Research
Montgomery, G.
Marketing work at Kans. State College prior to 1932, reviewed, 723–724
Moore, A. N.
joint author. See Gile, B. M., 958
Moorhouse, H. W. (1884–)
Outlook conference, 1923, 449
Moorhouse, L. A. (1875–)
Cost accounting conference, 1923, 428–432
and M. R. Cooper. Cost of producing cotton (1918 and 1920), 424
and S. B. Nuckols. Cost of producing sugar beets in Utah and Idaho, 1918–1919 (1921), 424
Morgan, W. S.
Member Committee on Monetary System, National Farmers' Alliance, Sept., 1889, 6
Morison, F. L.
Cost accounting conference, 1923, 428–432
Ohio farm land acquired by life insurance cos. through foreclosure in 1929 (1930), 962–963
Morman, J. B. (1868–1930)
Discussion of J. L. Coulter's paper on agric. marketing, 1908, 83
Morrill, Chester (1885–)
(Asst. Chief Bur. of Markets and C. E.). Hearings on wheat standards, 1921, 607, 610, 628
Morrison, F. B. (1887–), 66
joint author. See Ezekiel, M. J. B., 141
Morrow, G. E. (1840–1900), 58–60
Cattle feeding and management, 1886, 64
Our farming, its changing condition and outlook; address (1886), 58–59
Rept. to Bd. of Trustees, Univ. of Ill., 1888, 58
Soils and crops on the farm (1892), 60
Gregory tradition maintained by Morrow at Univ. of Ill., 60
Professor Ill. Industrial Univ., 1877–1884; Univ. of Ill., 1884–1894, 58–60
Mortenson, W. P.
Economic study of the Milwaukee milk market (1932), 662
Mortgages
Bailey, L. H. Significance of mortgage statistics in determining agric. situation. *In* statement before Amer. Economic Assn., 1896, 39
Holmes, G. K. and J. S. Lord. Real estate mortgages in U. S. 11th Census of U. S., 1890. Vol. 12 (1895), 773, 916–918
Matthews, N., jr. Double taxation of mortgaged real estate (1890), 776–778
Thompson, C. W. Costs and sources of farm mortgage loans in U. S. (1916), 925–926
Truesdell, L. E. and C. W. Thompson. Amortization methods for farm mortgage loans (1916), 928
U. S. Census Bureau

11th census, 1890. Vol. 12. Rept. on real estate mortgages (Holmes and Lord). (1895), 772–773, 916–918
1890. Population schedule for first time included inquiry on mortgage indebtedness, 261, 266–267
14th census, 1920. Press release, jointly with Bureau of Agric. Economics; estimated total farm mortgage debt (1923), 941
Valgren, V. N. and E. E. Engelbert. Farm mortgage loans by banks, insurance cos. and other agencies (1921), 939
Wickens, D. L. Farm mortgage credit (1932), 946–947
Wigder, C. F. Farm mortgage interest rates (1925), 956–957
AREA STUDIES
Connecticut
Bureau of Labor Statistics. Ann. rept. 4th, 1888 (mortgage status of 693 farms surveyed), 912
Illinois
Bureau of Labor Statistics. Bienn. rept. 5th, 1888 (total farm mortgage debt, by counties, 1870, 1880, 1887; first known attempt to make an estimate of this coverage for a whole state). (1888), 910
Indiana
Dept. of Statistics and Geology. Ann. rept. 1st, 1879 (total amount of real estate and chattel mortgages for 29 counties) 1872/3–1878/9 (1880), 909
Iowa
Murray, W. G. Economic analysis of farm mortgages in Story Co., Iowa, 1854–1931 (1933), 961–962
and F. L. Garlock. Farm mortgage debt in Iowa (1927), 960–961
Michigan
Bureau of Labor and Industrial Statistics. Ann. rept. 5th, 1887/8 (farm mortgage indebtedness). (1888), 911–912
Minnesota
Bureau of Labor. Bienn. rept. 4th, 1893/4 (farm mortgage debt and foreclosures, 1859–1891). (1895), 914–916
Johnson, E. C. Farm mortgage foreclosures in Minn. (1932), 966
Nebraska
Hinman, E. H. and J. E. Rankin. Farm mortgage history of 11 southeastern Neb. townships, 1870–1932 (1933), 962
New Jersey
Bureau of Labor Statistics. Ann. rept. 12th, 1889 (real estate mortgage indebtedness and foreclosure executions, 1856, 1870, 1875, 1880–1888). (1890), 912–914
Ohio
Minneman, P. G. Large land holdings and their operation in 12 Ohio counties (1929), 963
Morison, F. L. Ohio farm land acquired by life insurance cos. through foreclosure in 1929 (1930), 962–963
South Dakota
Johnson, S. E. and H. A. Steele. Aspects of farm mortgage situation in S. D. and their relation to a future land use policy (1933), 967–968
Wisconsin
Bureau of Labor, Census and Industrial Statistics. Bienn. rept. 7th, 1895/96 (data on interest on mortgage debts). (1896), 914
Morton, J. S. (1832–1902)
Secretary of Agric. under President Cleveland, 1893–1897, 8, 512–514
Stressed foreign markets, 512–514
Mosher, M. L. (1882–) and H. C. M. Case
Farm practices and their effects on farm earnings (1938), 403
Motts, G. N.
Motor truck marketing of Mich. fruits and vegetables (1932), 747
Moulton, H. G. (1883–)
Outlook conference, 1923, 449
Mrak, E. M. and W. V. Cruess
Utilization of surplus prunes (1929), 753
Mumford, H. W. (1871–)
Market classes and grades of cattle with suggestions for interpreting market quotations (1902), 547, 548
Production and marketing of wool (1900), 547
, C. L. Stewart, H. C. M. Case and P. E. Johnson. Developmental study of a rural-urban trade area (1929), 466, 743
Murray, C. B. (1837–1918)
Crop estimating, importance of work of Murray in development of, 199, 204, 206, 212–216
Life notes. n. d., 247
Pig marketing forecasts, 1872–1912; reported having been made, 247
Murray, L. O.
Committee on Dept. Methods, 220

Murray, N. C. (1872–)
Asst. statistician, U. S. Dept. of Agric. Bureau of Statistics; appointed in 1907, 484
Close-up view of development of agricultural statistics, 1900–1920 (1939), 208, 216, 220, 484
Condition repts. Statement to field agents, 1917, 233, 235–236
Letter to H. C. Taylor, Dec. 4, 1949, 484–485
Mentioned, 247
and S. A. Jones. First to use "ratio-relative" in acreage estimation, about 1916, 244
Murray, W. G. (1903–)
Economic analysis of farm mortgages in Story Co., Iowa, 1854–1931 (1933), 961–962
and F. L. Garlock. Farm mortgage debt in Iowa (1927), 960–961
Muskmelons
See Cantaloupe Industry

N

National Agric. Conference, 1922
Rept. of proceedings (1922), 576–583
Story of organization. H. C. Taylor *in his* Farm economist in Washington, 1919–1925. Unpub. ms., 577
National Agric. Organization Society
Functions and origin, 562
National Assn. of State Marketing Officials
Organization meeting, 1920; proceeding, 764–765
National Bd. of Trade (1868–), 99–215
Committee of Inquiry on Agric. Statistics, 1902, 214–215
Rept.; census improvement suggested, 268–270
Committee on Crop Repts., 1895, 204–213
Conferences on agric. repts., 1895, 1897; resolutions, 204–205, 208–209
Improvements in wheat acreage data commended, 1898, 211
Criticism of work of Division of Statistics, U. S. Dept. of Agric., 199
Proceedings, 1887–1888, 1895–1898, 1900–1903, 199–215
National Bureau of Economic Research, Inc.
Publication 15. National income and its purchasing power (King and Epstein). (1930), 459
Share of agric. in the national income, 1909–1925. *In its* News Bulletin. (Feb. 21, 1927), 507–509
National Conference on Land Classification
Proceedings, 1940, 853
National Conference on Marketing and Farm Credits
Proceedings. 1st–4th, 1913–1916, 567
National Farmers' Alliance and Industrial Union, 4–8
Committee on Monetary System. Rept., 1889, 7
Conventions, 1889–1892; summary, 4–8
President, L. L. Polk, 4
National Grange, Patrons of Husbandry
Atkeson, T. C. Outlines of Grange history, 1928, 12
Committee on Finance. Rept.; silver coinage, 1894, 10–11
Committee on Legislation. Statement; silver coinage, 1890, 9
Operations, 1889–1897, 8–12
Opposed to Sub-Treasury plan, 11
Silver coinage resolutions, 1889, 1891, 1896, 8–11
Worthy Master
Adams, D. W. Ann address (1876), 9
Brigham, J. H. 9, 10
National Income
King, W. I. and L. Epstein. National income and its purchasing power (1930), 459
National Bureau of Economic Research. Share of agric. in national income, 1909–1925, 1927, 507–509
Taylor, H. C. and J. Perlman. Share of agric. in the national income (1927), 506, 509
"National Union Conference," 5
Nebraska
Agric. credit. *See* Farm Finance and Agric. Credit
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
Bureau of Labor and Industrial Statistics
Bienn. repts. 1st, 1887/88 (summary of agric. credit questionnaire survey). (1888), 910–911
Livestock
Statistics gathered by assessors, 237
University of Neb.
Chancellor, *See* Canfield, J. H.
Farm management course. *See* Educational Facilities
Wheat grown 1920; cost records, 423
Neftel, K.
Flour milling processes. U. S. Census. 10th census, 1880. Agriculture (1883), 263
New England
Bidwell, P. W. Agric. revolution in New England (1921), 304
Rural economy in New England at beginning of 19th cenutry (1916), 304
Eliot, J. Essays upon field husbandry in New England . . . 1748–1762 (1934), 338–339

New Hampshire
Agric. surveys. *See* Farm Management Research
Farm Management Research. *See that title*
New Jersey
Bureau of Labor Statistics. Ann. rept. 12th, 1889 (real estate mortgage indebtedness and foreclosure executions). (1890), 912–914
Extension work. *See* Extension Work
Farm labor. *See* Farm Labor
Mortages. *See* Mortgages
State Agric. College. Extension bulletins. *See* Educational Facilities
New York City
Milk market. *See* Milk Marketing Research
New York State
College of Agriculture. *See* Educational Facilities
Dept. of Farms and Markets Agric. bulletins. *See* Government Studies, U. S. State Level
Governor, 1929–1933 (Roosevelt). Message recommending survey of rural lands of the State (1931), 865
Reforestation Commission Rept. (1932), 865
New York State, general
Agric. credit. *See* Farm Finance and Agric. Credit
Agriculture
Hedrick, U. P. History of agric. in State of N. Y. (1933), 323–325
Apple market. *See* Apple Marketing Research
Apple orchards. *See that title*
Cooperative fire insurance cos. in N.Y. (Bartlett). (1924), 982–983
Cooperative marketing research. *See that title*
Cost accounting. *See that title*
County studies
Chemung Co. Farm management survey (Scoville), 1912, 376
Livingston Co. Economic study of agric. in northern . . . (Warren). (1932), 359, 364, 365
Size of farms of . . . (Warren and Livermore). *In their* Agric. survey of Tompkins Co. (1911), 147
Niagara Co. Costs and returns in producing apples in Newfane-Olcott area . . . 1926–1928 (La Mont). (1933), 359
Seneca Co. Farm labor study (Gillette). (1924), 885
Tompkins Co. Studies
Hunt, T. F. Study started at Cornell in 1903; undertaken in 1906, 81, 357
Lewis, A. B. Land utilization in . . . (1934), 865
Warren, G. F. Summary of . . . *In* Ann. rept. Dept. Farm Management and Farm Crops, Cornell Univ. (1911), 363
Successor of Hunt, 81
and K. C. Livermore. Agric. survey of . . . townships of Ithaca, Dryden, Danby and Lansing (1911), 147, 357, 360, 362, 365, 807–808
Agric. survey of . . . townships of Ulysses, Enfield and Newfield (1911), 357
Notes from agric. survey in . . . 1911, 357
Size of farms in . . . *In their* Agric. survey . . . townships of Ithaca, etc. (1911), 147
Wayne Co. Apple orchard survey (Warren). (1905), 359
Extension work. *See that title*
Farm labor. *See that title*
Farm management research. *See that title*
Fruit trade. *See* Fruit Marketing Research
Land survey. *See* Land Economics Research
Potato trade. *See* Potato Marketing Research
Taxation. *See* Taxation
Vegetable Marketing. *See* Vegetable Marketing Research
Newell, F. H. (1862–1932)
Agric. by irrigation in western part of U. S. Census of U. S. 11th. Census, 1890 (1896), 266
Newell, H. M.
joint author. See Lloyd, J. W., 742–743
Newton, I. (1800–1867)
U. S. Commissioner of Agric. Annual and monthly reports on condition of crops, 1862–1863, 179–181
Newton, R. W.
and W. O. Hedrick. Farm real estate assessment practices in Mich. (1928), 1015
joint author. See Brannen, C. O., 1001; Olsen, N. A., *et al.*, 946, 983, 1002–1003
Niagara County, N. Y.
See N. Y. State, County studies
Nicholls, W. D.
Mentioned, 428, 430
Nichols, R. D.
joint author. See Grimes, W. E.; Hodges, J. A., 121, 437
Nickson, A. C.
Secy. of Liverpool Cotton Assoc., 620, 623
Noblin, S.
Leonidas Lafayette Polk, agrarian crusader (1949), 4, 6

Nordby, J. E. (1887–)
Type in market swine and its influence on qualities of pork (1932), 467
North American Land Co.
Observations . . . London (1796), 286
North Carolina
Agric. credit. *See* Farm Finance and Agric. Credit.
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
Coastal plain
Profitable farm organization for the coastal plain of N. C. (Forster, Saville and Hutson). (1926), 438–439
Dairy farms, cost accounting. *See* Cost Accounting, Milk Production
Dept. of Agric. Bulletins. *See* Government Studies, U. S. State Level
Farm credit. *See* Farm Finance and Agric. Credit
Farm management. *See* Farm Management Research
Livestock. *See* Livestock Industry
State College of Agric. and Engineering. Bureau of Economic and Social Research, 438–439
Research bulletins. *See* Educational Facilities
Tax Commission. *See* Government Studies, U. S. State Level
Taxation. *See* Taxation
North Dakota
Agric. College. *See* Educational Facilities
Agric. credit. *See* Farm Finance and Agric. Credit
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
Red River Valley
Coulter, J. L. Industrial history of the valley of the Red River of the North (1910), 297–299
State Historical Socy. of N. D. Collections. Vol. 3 (1910), 297–299
Wheat grown, 1920; cost records, 423
Norton, L. J.
and L. Spencer. Preliminary survey of milk marketing in N. Y. (1925), 735
and C. L. Stewart. Seasonal features of Ill. grain marketing (1929), 740–741
joint author. See Stewart, C. L., 740–741
Norton, W. J.
joint author. See Crocheron, B. H., 469, 753
Nourse, E. G. (1883–)
Economic philosophy of cooperation (1922), 677–678
Fifty years of farmers' elevators in Iowa (1923), 674–676
Organization of American Institute of Cooperation; participation of Dr. Nourse, 706
Outlook for cooperative marketing (1922), 676–677
and C. W. Hammans. Cooperative livestock shipping in Iowa in 1920 (1921), 672–673
Nuckols, S. B. (1887–)
joint author. See Moorhouse, L. A.
Nut Industry
See Almonds
Nye, R. J.
Wisc. State Bd. Public Affairs, 551
Nyhus, P. O. (1894–)
Statistical method, 1924, 251

O

Oats
Price. *See* Prices of Farm Products
Obrecht, R. C.
Market classes and grades of horses and mules (1908), 547
O'Brien, H. R. (1889–)
Ill. gets the tax facts (1924), 997–999
O'Byrne, W.
joint author. See Vernon, J. J., 466
Ohio
Agric. Exp. Sta. Bulletins (also bimonthly and mimeographed). *See* Government Studies, U. S. State Level
Board of Agric. Ann. rept., 1893 (Thorne. Relative cost of beef and butter). (1894), 393
State Bd. of Equalization Repts., 1880, 1890 (value of farm buildings), 107
State Univ.
Agric. Extension Service. Bulletins. *See* Government Studies, U. S. State Level
Course in rural economics. *See* Educational Facilities
Graduate School of Agric. in session. *See* Educational Facilities
Ohio, general
Apple industry and marketing. *See* Apple Marketing and Research
Cooperative marketing research. *See that title*
Cost accounting methods, 1905–1923. *See* Cost Accounting
County studies (*See also below* Land holding) Washington Co. Farm profits — figures for the same 25 farms, 1912–1918 (1920), 368
Elevator management. *See that title*
Extension work. *See* Extension Work
Farm labor. *See* Farm Labor
Land holdings
Minneman, P. G. Large land holdings and their operation in 12 Ohio counties (1929), 963
Livestock
Farming. *See* Livestock Farming
Statistics; gathered by assessors, 237
Livestock marketing. *See* Livestock Marketing Research

Marketing research studies, 1929–1932, 755–758
Milk marketing. *See* Milk Marketing Research
Mortgages. *See* Mortgages
Poultry. *See* Poultry Marketing Research
Prices of farm products. *See that title*
Stock Breeders' and Farmers' Institute, Proceedings (1894), 393
Taxation. *See* Taxation
Tomato marketing. *See* Tomato Marketing Research
Ohio Trail
See Turnpikes
Oklahoma
Univ. of Okla.
Dale, E. E. Range cattle industry (1930), 321
Olmsted, F. L. (1822–1903)
Back country (The). (1860), 346
Cotton Kingdom (1861), 346
Journey in the seaboard slave states . . . 1853–1854 (1856), 346
Letters to New York *Times*, 1852–1853, 346
Texas journey (1857), 346
Walks and talks of an American farmer in England, 1852, 345
Olmsted, F. L., jr.
Biographical sketch of F. L. Olmsted (1904), 346
Olmsted, V. H. (1853–1925)
Ann. rept., 1910 (prices of farm products), 487
Chief statistician, Bureau of Statistics, U. S. Dept. of Agric., 1906–1913; succeeded by L. Estabrook, 1913–1914, 227–231
Farm wage rate investigations, 1910, 881
Olsen, N. A. (1886–1940), C. O. Brannen, C. F. Cadisch and R. W. Newton
Farm credit, farm insurance, farm taxation, 1924, 944–946, 983, 1002
Onions
Cance, A. E., W. L. Machmer and F. W. Read. Conn. Valley onion supply and distribution (1916), 563
Stevens, W. M. Marketing and distribution of American grown Bermuda onions (1925), 711–712
Options and Futures
See Futures Trading
Orchard surveys
See Almond Industry; Apple Orchards; Pear Orchards
Oregon
Prunes. *See* Prune Market
State College; farm management course, 1907. *See* Educational Facilities
Otis, D. H. (1872–1941)
Amer. Farm Management Assn. organization; participation, 1910, 84
Committee on Scope, etc., member, 85
College of Agric., University of Wisc. Farm management demonstration work in Wisc.; financial records features; invention of account book, 381
Prof. of farm management, 1909–1919, 81, 381
Position in 1910/11 controversy on "farm management" and "rural economy" cleavage, 91
Ousley, C. (1863–1948)
Statement: Texas farming credit; one-crop farming cause of high credit price (1917), 937–938
Outlook Approach, 447–479
Overholzer, E. L. (1888–)
Study of shipment of fresh fruits and vegetables to the Far East (1930), 753
Overton, M. H.
Increasing farm profits with more early potatoes in Ind. (1926), 462
What is happening to agric. in northwestern Ind.? (1928), 462
and P. K. Edwards. Production and marketing of farm products in Wayne Co., Ind. (1925), 461

P

Packing Industry
See Meat Packing Industry
Page, W. H. (1855–1918)
Member of Country Life Commission, 353
Palmer, A. W.
Head of Cotton Division of B.A.E. *re* Cotton Standards Act, 1923, 619, 620, 621, 625
Par System Estimates
Explanation (Becker), 244–245
Fruit crop production, 245
Parity
Early use of term, xiii
Park, J. W.
joint author. See Cleaver, H. M., 753
Parker, E. C. (1881–1918)
and T. P. Cooper. Cost of producing Minn. farm products, 1902–1907 (1910), 399
joint author. See Hays, W. M., 446
Patrons of Husbandry
National Grange. *See* National Grange
Patten, S. N.
Co-founder Amer. Economic Assn., 1885, 857
Peach Marketing Research
Gaylord, F. C. Ind. peaches (1927), 639
Pear Orchards
Shear, S. W. Economic aspects of the pear industry [of Calif.] (1928), 473
Pearson, F. A. (1887–)
Principles involved in fixing the price of milk (1919), 494

Pearson, F. A. (*cont.*)
Outlook conference, 1923, 449
joint author. See Warren, G. F., 494
Peas
Walker, D. Production and marketing of N. Y. market peas (1929), 734–735
Peck, F. W. (1885–)
Cost of production studies in U. S. Office of Farm Management in 1919; expansion, 423
Experiences of northern Minn. settlers, 1918, 866, 867
Methods of conducting cost of production and farm organization studies (1921), 427–428
and A. Boss. Cost of milk production (1918), 419–420
joint author. See Boss, A.; Cooper, T. P., 415–418, 418–419
Peck, J. M.
New guide for emigrants to the West. Ed. 2 (1837), 286
Peck, Wm. (1880–)
Cost studies to test crop selection, 403–404
Peek, G. N. and H. S. Johnson
Equality for agric. Ed. 2 (1922), 583–585
Peffer, W. A.
Agric. depression: causes and remedies. Rept. Senate Committee on Agric. and Forestry. Sen. rept. 787, 53d Congress, 1894 (1895), 19–25
Senator from Kans., 51st–54th Congress (1891–1897)
Pennington, M. E.
Marketing work plans conf., 535–536
Pennsylvania
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
Director, H. P. Armsby, 65
Cooperative milk marketing. *See* Cooperative Marketing Research
County Studies
Blair Co. Adjusting production to meet home market demands in (Dunlap, Critchfield and Carroll) (1924), 459, 461
Chester Co. Factors affecting farmers' earnings in southwestern Penn. (Ezekiel). (1926), 373–375
Farm management practice. (Spillman, Dixon and Billings). (1916), 151–152, 319–320, 368–369, 374
Lebanon Co. Agric. production and marketing in (Berger, *et al.*). (1925), 460
Dairy farms. *See* Milk Production
Eggs
Consumption (Lininger and Charles). (1928), 751
Marketing (Lininger). (1927), 750
Farm management research. *See that title*
Marketing research studies, 1926–1932, 747–752
Milk marketing. *See* Milk Marketing Research
Potatoes. *See* Potato Marketing Research
Poultry. *See* Poultry Marketing Research
State College of Agric. *See* Educational Facilities
Perin, S. W.
joint author. See Ingersoll, C. I., 391
Perkins, H. F.
Survey of rural Vermont, 383
Perlman, J.
joint author. See Taylor, H. C., 506, 508–509
Persons, W. M. (1878–1937)
Comm. on crop estimates, 1922, 240
Outlook conference, 1923, 449
Peteet, W. (1869–)
Farming credit in Texas (1917), 935–937
Peters, A. H.
Depreciation of farming land (1889), 909
Peters, E. T.
Agric. depression. Address, 1896, 42
Recent features of our foreign trade (1894), 512
Peters, R. (1744–1828)
Phil. Socy. for Promotion of Agric., 282
Peterson, G. M. (1897–1940)
joint author. See Black, J. D., 733
Phillips, C. D. and D. G. Card
Organization and management problems of cooperative strawberry marketing assns. in Ky. (1931), 680–681
Phillips, H. D. (1888–)
Cooperative marketing in the Chautauqua-Erie grape industry (1919), 667–668
Phillips, U. B. (1877–1934)
Economic cost of slaveholding in the Cotton Belt (1905), 313
Economics of the plantation (1903), 313
Life and labor in the old South (1929), 314–315
Pig Marketing Estimates
Murray, C. B. Future marketing of hogs reported, 1872–1912, 247
Pig Production Estimates
Effect on breeding plans, 247
Rural mail carriers use of card, 1922, 247, 248–249
Pinchot, Gifford (1865–1946), 220
Member of Country Life Commission, 353
Plantation Economics
(*See also* Southern States)
Economics of the plantation (Phillips). (1903), 313
Genesis and expansion of plantation system . . . during the colonial period (Gray), 1911, 310

Ten years on a Ga. plantation since the war (Leigh), 1883, 300
Plunkett, Sir Horace
Leadership of democratic method of agric. organization; tribute by H. C. Taylor, 642–643
Policies
See Government Policies
Polk, L. L. (1837– ?), 4–6
Address before U. S. Senate Committee on Agric. and Forestry, April 22, 1890, 4
Agricultural depression; causes, remedy (1890), 4
Member of Committee on Monetary System, National Farmers' Alliance. Rept., 1889, 6
Noblin, S. Polk, agrarian crusader (1949), 4
Pollock, Sir F. (1845–1937)
Interview by H. C. Taylor, 1900, 289
Pond, G. A. (1889–)
Letter to H. C. Taylor; budgeting approach, 1946, 439–440
Study of dairy farm organization in southeastern Minn. (1926), 439
and J. W. Tapp. Study of farm organization in southwestern Minn. (1923), 121, 320, 433–437, 442
, G. A. Sallee and C. W. Crickman. Economic study of livestock possibilities in the Red River Valley of Minn. (1931), 439
Planning systems of farming for the Red River Valley of Minn. (1931), 439
joint author. See Sallee, G. A.; Wilcox, W. W., 161
Poore, B. P.
History of Agric. of the U. S., 1886 (1867), 282
Population
Farm population
Galpin, C. J. and V. B. Larson. Farm population of selected counties (1924), 275
U. S. Census Bureau, 14th and 15th decennial censuses; farm population coverage, 1920, 1930, 274–276
1st quinquennial population census, 1925, 275
Ward, L. F. Ruralization and urbanization, 1896, 44
Populist Movement
(*See also* Farmers' Movement)
McVey, F. L. The Populist Movement (1896), 907
Pork
See Meat Industry
Potato Farming
Idaho Agric. Exp. Sta. Bulletin 153. Potato situation in Idaho (1927), 467
Overton, M. H. Increasing farm profits with more early potatoes in Ind. (1926), 462
Potato Marketing Research
Black, J. D., B. A. Holt and G. M. Peterson. Economic aspects of local potato warehouse organization (1925), 733
Stokdyk, E. A. Some factors influencing the mid-season potato market (1931), 726
AREA STUDIES
Indiana
Gaylord, F. C. and H. M. Cleaver. Marketing Ind. potatoes (1932), 640
Michigan
Horner, J. T. Marketing Mich. potatoes (1925), 744–745
New York State
Rasmussen, M. P. Economic study of marketing N. Y. potatoes (1925), 669
Pennsylvania
Cowden, T. K. Marketing Penn. potatoes in 15-pound containers (1932), 751
Lininger, F. F. Potato marketing in Penn. (1932), 751
Wisconsin
Taylor, H. C. Marketing of Wisc. potatoes (1915), 555–556
Potato Prices
See Prices of Farm Products, 455, 467, 476
Poultry Farming
California
Tinley, J. M. and E. A. Stokdyk. Poultry Producers of Southern Calif. operations, 1931, 697–698
Voorhies, E. C. Calif. poultry industry: statistical study (1926), 470
Idaho
Idaho Agric. Exp. Sta. Bulletin 154. Poultry situation in Idaho (1927), 467
Poultry Marketing Research
Cooperatives. *See* Cooperative Marketing Research
Eggs. *See* Egg Marketing Research
Market News Service operations, 634
AREA STUDIES
Kentucky
Card, D. G. Marketing Ky. poultry (1928), 721
Pennsylvania
Lininger, F. F. and T. B. Charles. Study of egg and poultry consumption in Penn. (1928), 751
Powell, G. H.
Cooperation in agric. (1913), 687–688
Experience of Calif. Fruit Growers' Exchange (1913), 541
Fundamental principles of cooperation in agric. (1914) and (1920), 691–692
Fundamentals of cooperative marketing. Address (1922), 581–583

Power, J. B.
Land Commissioner for Northern Pacific Railroad, 297
Powers, L. G.
Chief statistician for agric. in 12th and 13th censuses of U. S., 1900, 1910, 215, 221, 267–268, 270
President of U. S.
See Government Studies, U. S. Federal Level
Price, H. B. (1888–)
Ed. Marketing of farm products (1927) 654–658
and C. M. Arthur. Management problems of farmers' elevators (1925), 733
joint author. See Black, J. D., 654–657; Metzger, H., 733
Price, H. C. (1875–), 93, 95
Course in rural economics Ohio State Univ., 1903, succeeding Hunt, 81
Position in 1910/11 controversy on farm management and rural economy terminology cleavage, 90
Price Fixing
Taussig, F. W. "Bulk line" theory developed, 498
Taylor, H. C. Government price fixing. *In his* A farm economist in Washington, 1925, 497–499
Price fixing and the cost of farm products (1918), 407–408, 555
Wallace, H. A. Ratio method. *In his* Agric. prices (1920), 494–497
Warren, G. F. Some purposes and results of price fixing (1919), 491–492
Price Forecasting
Price outlook studies, 1914–1930, 454–459
U. S. Bureau of Agric. Economics. Div. of Statistical and Historical Research Staff assigned to price forecasting, 454
U. S. Statutes. Appropriation Act, Dept. of Agric., fiscal year 1929, prohibited cotton price forecasting. Public Act 392, 70th Congress, 1927–1929, 456
Prices of Farm Products, 483–509
Anderson, S. Address as chairman National Agric. Conference (agric. prices and present situation). (1922), 581
Bean, L. H. Farmers' response to price (1929), 458
Cornell Univ. Ann. rept., 1918/19 (Warren). Importance of prices in adjusting farm activities, 492
Crowell, J. F. What makes farm prices. *In his* Distribution of farm products (1901), 520–521
What makes the price of farm products to consumers. *In his* Distribution of farm products (1901), 522–524
What makes wholesale market prices. *In his* Distribution of farm products (1901), 521–522
Emerick, C. F. Price cycles of agric. products, 1840–1890. *In his* Agric. discontent, 1896/97, 46
Everitt, J. A. The Third Power, farmers to the front, 1903, 487–488
George, J. Z. Cause of low prices. *In his* Condition of cotton growers rept. Sen. rept. 986, 53rd Congress (1895), 26
Hale, R. F. Estimating local market prices and farm labor since 1920 (1939), 485
Jesness, O. B. Cooperative marketing and price control (1926), 681–683, 719
Murray, N. C. Monthly agric. prices begun in 1908. *In his* Close-up view of development of agric. statistics, 1900–1920 (1939), 484
Peffer, W. A. Prices. *In his* Agric. depression rept. (1894), 20
Sarle, C. F. Reliability and adequacy of farm price data (1927), 485
Struggle for price supports, 1920–1933, 509
Taylor, H. C. High prices and intensive farming, 1917 (1918), 137
Prices of farm products (1911), 488–490
Wallace's search for remedies for low prices, 1925, 591–600
and S. W. Mendum. War prices and farm profits (1919), 368, 370–371
U. S. Dept. of Agric. Bureau of Agric. Economics. Crop and Livestock Estimates Div. Crop and Livestock Reporting Service (1933), 486
Bureau of Statistics. Ann. rept., 1910 (farm price recovery in 1909 from low of 1899), 487
Price reporting 1862–1927; chronology of various price series, 483–487
Statistical bulletins, 14–17. Prices of farm products received by producers, 1899, 1909 (1927), 487
U. S. Federal Farm Board. Supply and demand price; representative of official thought in Washington since 1840; change culminating in 1929 with creation of Federal Farm Board, 599–600
Wallace, H. A. Agric. prices (1920), 495–497
Warren, G. F. Crop yields and prices and our future food supply (1914), 490
Prices of farm products (1920), 492–493
Prices of farm products in the U. S. (1921), 493–494

and F. A. Pearson. The agric. situation (1924), 494
Prices (1933), 494
Young, E. C. and O. A. Day. Study of price cycles recommended. *In their* Prices of farm products in Ind. (1928), 501, 752

AREA STUDIES

Idaho
Apples. *See* Apple Marketing Research
Potato prices. *See below* Product Studies
Indiana
Prices of farm products in Ind. (Young and Day). (1928), 501, 752
Iowa
Grain prices. *See below* Product Studies
Michigan
Beans. *See below* Product Studies
Missouri
Sweet potato prices. *See below* Product Studies
Ohio
Prices of Ohio farm products (Falconer). (1923), 499

PRODUCT STUDIES

Beans
Marketing Mich. beans (Hedrick). (1931), 746
Cotton
Administration of Cotton Futures Act reviewed, 614–630
Cotton prices and markets (Cox). (1926), 503, 713–715
Factors affecting price of cotton (Smith). (1928), 456
Prohibition by Congress of cotton price forecasting. Public Act 392, 70th Congress, 456
Relation of farm prices to quality of cotton (Crawford and Gabbard). (1928), 761
Grain
Peffer, W. A. *In his* Agric. depression, 1894, 21
Shepherd, G. S. Does Iowa dump its grain? (1929), 502
Hogs. *See* Hog Price Research
Milk. *See* Milk Price
Oats
What makes the price of oats (Killough). (1925), 455, 503
Potatoes
Factors influencing price differentials between potato markets (Working). (1925), 455
Factors relating to prices of Idaho potatoes (Heflebower). (1929), 467
Sweet potatoes
Factors affecting sweet potato prices in Mo. (Thomsen and Fankhanel). (1931), 476
Wheat
Cause of wheat price fluctuation (Laughlin *in his* Causes of agric. unrest). (1896), 38–39
Wheat futures (Peffer *in his* Agric. depression), 1894, 22

Prize Essays, Lubin, 16–18, 45–49

Produce Exchanges
Amer. produce exchange markets. Annals Amer. Academy of Political and Social Science. Vol. 38 (1911), 568
Chicago Bd. of Trade (Huebner. *In his* Functions of produce exchanges). (1911), 570
Functions of produce exchanges (Huebner). (1911), 568–570

Production Cost
See Cost Accounting

Production Factors Variations, 154–164
Black, J. D. Introduction to production economics (1926), 153, 159
Boies, H., Governor of Iowa. Statement challenged by H. C. Taylor, 155
Hamer, O. S. *In his* Master farmers of America (1930), 161
Holmes, C. L. *In his* Agric. entrepreneurship (1932), 161
In his Economics of farm organization (1928) ch. xii, 153, 159
Hunter, B. and P. Eke. *In their* Method of determining what to produce (1932), 467–468
Rogers, J. E. T. *In his* Social economy (1872 ed.), 154
Taylor, H. C. Economic properties of the factors of production. *In his* Introduction to study of agric. economics (1905), 156
In his Farm proprietorship in the U. S. ms., 1898, 156
In his Outlines of agric. economics (1925), ch. xi, 159
Two dimensions of productivity (1917), 157–159, 820
U. S. Government measures, Federal and State. *See* Government Studies, U. S. Federal Level; Government Studies, U. S. State Level
Walker, F. A. *In his* Political economy, ed. 3 (1888), 155

SPECIAL STUDIES

Size of farm. *See* Size of Farms, 143–153
Soil types. *See* Soil Research

Production Reporting
See Crop Reporting

Prothero, R. E.
English farming, past and present (1912), 332
Mentioned, 63

Prune Market
Critchfield, B. H. Demand, marketing and production of Ore. and Wash. prunes (1927), 717–719
Mrak, E. M. and W. V. Cruess. Utilization of surplus prunes (1929), 753
Public Finance
Social Science Research Council. Bulletin 1. Research in public finance in relation to agric. (1930), 1019–1020
Public Land
Association for Advancement of Science petitions Congress to change the public land system, 1890, 858
Hart, A. B. Disposition of our public lands (1887), 858
Hibbard, B. H. History of public land policies (1924), 303, 857, 859, 991–992
Salter, L. A., jr. Conservation era, 1891–1921. *In his* Critical review (1948), 859–860
Public Savings Depositories
Establishment. Peffer, W. A. *In his* Agric. depression, 1894, 25
Pugsley, C. W. (1878–1940)
re Radio, 635
Amer. Farm Management Assn.; organization participant, 1910, 84, 90
Farm management course, Univ. of Neb., 1909, 81
Purchasing Power of Farm Products
Basic data; summary, 505–506
Purdue Univ.
Agric. Exp. Sta. Bulletins, 1928–1932
320. Prices of farm products in Ind. (Young and Day). (1928), 501
369. Human factor in management of Ind. farms (Wilcox and Lloyd). (1932), 161
Purnell Funds stimulate marketing research, 710

Q

Qualities of Men, 46, 62, 76, 154–164
Quality Control
Boyle, J. E. Principle of quality relationship to price. *In his* Marketing of agric. products (1925), 733
Card, D. G. Quality maintenance. *In his* Marketing Ky. eggs (1928) and Marketing Ky. poultry (1928), 721

R

Rail Transportation
Freight rates. *See* Freight Rates
Johnson, E. R. Farm problem and transportation. Address, 1896 (1897), 41
Randell, C. G. (1896–)
Cooperative marketing of livestock in the U. S. by terminal assns. (1928), 646
Rankin, J. O., (1884–)
joint author. See Hinman, E. H.
Rasmussen, M. P. (1893–)
Economic study of marketing N. Y. potatoes (1925), 669
Rauchenstein, E. (1889–)
Cost accounting conference, 1923, 428–432
Economic aspects of the apple industry (1927), 473
Economic aspects of the cantaloupe industry (1927), 470
Rawl, B. H. (1876–)
Marketing work of Dairy Division, U. S. Dept. of Agric. (1913), 535, 536
Read, F. W.
joint author. See Cance, A. E., 563
Reclamation of Land
See Irrigation
Red River Valley
See Minnesota
Reed, G. M. (1896–)
joint author. See Stokdyk, E. A., 726
Reed, W. G. (1884–)
Frost and the growing season (1918), 316
Reed, Wm. G.
Member first Agric. Outlook Conference, 1923, 449
Regional Factors
See Geographic Factors
Reid, W. H. E.
joint author. See Thomsen, F. L.
Rent
Fetter, F. A. Relation between rent and interest, 1903, 103
Ricardo, D. Theory of rent; Taylor's modification, 786
Taylor, H. C. Land valuation, cause of rise in rents, speculation. *In his* Intro. to study of agric. economics (1905), 102–104
Republican State Conventions
California, 1894. Lubin subsidy plan plank, 13–17
"Requirements" defined, 419
Rhoades, E. L. (1893–)
Harvest labor (1921), 884–885
Rhode Island
Course in farm management under F. W. Card, 81
Ricardo, D. (1772–1822)
Mentioned, 154
Theory of rent; Taylor's modification, 786
Richards, H. I.
joint author. See Armentrout, W. W.; Vernon, J. J., 460
Richards, P. and F. L. Thomsen
Marketing stock hogs in Mo. (1930), 763–764
Richardson, J. D. (1843–1914)
Compilation of messages and papers of the Presidents, 1789–1897, 258
Richmond, Va.
Milk market (Vernon and Kifer). (1928), 762

Richmond, Wayne Co., Ind.
Market provision. *See* Indiana
Rickey, L. F. (1890–)
Costs of storing corn on the farm (1927), 739–740
joint author. See Stewart, C. L., 740
Riley, M.
Help given farmers to organize; comment, 562
Roanoke, Va.
Agric. sitation in Roanoke and its trade territory (Vernon and Richards). (1925), 466
Robb, F. G.
Fruits and vegetables standardization, 637
Robbins, R. M.
Our landed heritage (1942), 857
Roberts, G. E.
Outlook conference, 1923, 449
Roberts, I. P. (1833–1928)
College of Agric., Cornell, 1784–1903; comment by Lauman, Warren and Thomson, 74–75
Farmers' business handbook (1903), 74
Fertility of the land (1897), 101
Mentioned, 54
Robertson, F. E.
Some profitable and unprofitable farms in N. H. (1913), 367
Robertson, L. S. (1890–)
Changes in farming in Lake and Porter counties, Ind., as a result of nearness to industrial cities, 1932, 464
Farm management extension training, 378
and E. R. Bonham. Variation in local marketing procedure for grain, hay, livestock and feed in northwestern Ind. (1932), 463
Robinson, E. V. (1867–1915)
Early economic conditions and development of agric. in Minn. (1915), 282
Robinson, F. H. and W. C. Jensen
Agric. production, consumption and marketing study in the Greenville, S. C. trade area (1927), 465
Robinson, H. A.
Chief statistician Div. of Statistics, U. S. Dept. of Agric., 1893–1897
Expense of raising corn and wheat; rept., 1893 (1894), 391–393
Local taxation as affecting farms (1897), 994–995
Succeeded by J. H. Hyde; succeeding J. R. Dodge, 203–208
Work of Robinson
Holmes, G. K. Work of Robinson. *In his* Special investigations (1917), 207
National Bd. of Trade. Work of Div. of Statistics under Robinson (1896), 206–207
Robinson, S. (1803–1880)
Article on cotton cost data in U. S., 1849; reprinted *in his* Selected writings, 1936. Vol. 2. H. A. Kellar, ed., 388–389
Travels over settled areas of U. S., 1841–1851; journals in which his agric. writings were printed, 346–347
Robotka, F. (1889–)
Accounting records and business methods for livestock shipping assns. (1923), 646
Accounting records for livestock shipping assns. (1922), 674
joint author. See Hibbard, B. H., 930–934
Rockefeller Foundation
Mentioned, 383
Rockwall Co., Tex.
See Texas
Rogers, J. E. T. (1823–1890)
Six centuries of work and wages (1884), 782, 785
Social economy (1872 ed.), 154
Roosevelt, F. D. (1882–1945)
Message, as Governor of N. Y., recommending survey of rural lands of N. Y. (1931), 865
Roosevelt, Theodore (1858–1919)
Mentioned *re* Conservation, 859
Roscher, W. (1817–1894)
Principles of political economy (1878), 56
Ross, E. D.
joint author. See Schmidt, L. B.
Ross, H. A.
Demand side of the New York [City] milk market (1927), 735–736
Marketing milk in the Chicago dairy district (1925), 737–738
Supply side of the New York [City] milk market (1931), 736
Roth, W. J.
Mentioned, 161
Rowe, W. H. (1896–)
Agric. credit corporations affiliated with cotton cooperative marketing assns. (1932), 952–953
Wheat crop insurance on actuarial basis project, 1936, 987
joint author. See Baggett, R. T., 987–988
Rubinow, I. M.
Russian wheat and wheat flour in European markets (1908), 525
Russia's wheat trade (1908), 525
Ruffin, E. (1794–1865)
Mentioned, 337
Questionnaire prepared as basis of his rept. of 1843; copy, 343–345
Rept. of commencement and progress of the agric. survey of S. C. for 1843, 342–345
Rural Mail Carriers
Acreage estimate survey by rural carriers succeeded ann. inquiry system in 1924, 242
Cattle statistics collection, 249

Rural Mail Carriers (*cont.*)
Cooperation of Dept. of Agric. with Post Office Dept. in arranging collection of livestock statistics, 246
Livestock statistics collection efforts 1914, 1917, 1922, 235, 246, 249
Rural-Urban Adjustment
Demand-supply procedure imbalance. *See* Farm Management Research: Home Market Adjustment
Ruralization and urbanization. Address by L. F. Ward before Amer. Economic Assn., 1896 (1897), 44
Rusk, J. M. (1830–1893)
Mentioned, 510
Rept. of Secy., 1891 (1892), 197
Russell, A. (1811–1871)
Agric. census of 1840; suggestions, 259
Principles of statistical inquiry (1839), 123, 259
Russell, B. A.
joint author. See T. D. Johnson, *et al.*, 465
Russell, H. L. (1866–)
Cooperation, 556, 557, 562–563
Dean College of Agric., University of Wisc.; letter from H. C. Taylor suggesting program for clarifying terminology of agric. economics, 1910, 89
Russia
Wheat and wheat flour in European markets (Rubinow). (1908), 525
Wheat trade (Rubinow). (1908), 525
Rutter, F. R.
Cereal production of Europe (1908), 525
European grain trade (1908), 525
International sugar situation (1904), 525

S

Sallee, G. A.
, G. A. Pond and C. W. Crickman. Economic study of livestock possibilities in the Red River Valley of Minn., 1931, 439
joint author. See Pond, G. A.
Salter, L. A., jr. (1911–1946)
Critical review of research in land economics, (1948), 852, 856–870
Sampson, H. W.
Fruits and vegetables, 637
Sanborn, A. W.
Wisc. State Bd. Public Affairs, 551
Sanborn, N. D.
Harvesting and marketing cantaloupes and honey dew melons in the Ark. Valley of Colo., 1924–1925 (1926), 638
Sanders, J. T.
joint author. See Brannen, C. O., 1001; Gray, L. C.; Stewart, C. L., *et al.*, 851, 869
Sapiro, A. (1884–)
Advocate of centralized type of cooperatives, 576
Black, J. D. Letter to H. C. Taylor, on Minn. Agric. Exp. Sta. Bulletin 211 and Sapiro philosophy, May 5, 1948, 654
Leader in U. S. of autocratic method of agric. organization, 643
Sarle, C. F. (1892–)
Adequacy and reliability of crop-yield estimates (1932), 243
Reliability and adequacy of farm price data (1927), 485
Saville, R. J. (1899–)
Systems of livestock farming for the mountain region of N. C. (1928), 440
joint author. See Forster, G. W.
Schaars, M. A.
joint author. See Macklin, T., 659–660
Schafer, J. (1867–1911), 291, 292, 294–297
Four Wisc. counties, prairie and forest (1927), 294–295
History of agric. in Wisc. (1922), 296
Microscopic method applied to history (1921), 294
Schmidt, L. B. (1879–)
Economic history of Amer. agric. as a field for study (1916), 280–282
and E. D. Ross, eds. Readings in the economic history of Amer. agric. (1925), 282
Schoenfeld, W. A. (1888–)
Some economic aspects of marketing of milk and cream in New England (1927), 712–713
joint author. See Taylor, H. C., 551, 553, 662
Scholl, C. A. and W. O. Hedrick
Lansing [Mich.] food survey (1930), 466
Scofield, C. S.
Economics of crop disposal (1913), 534–535
Scotsman; daily; Edinburgh
Extracts and cited, 335
Sponsor of Macdonald survey of 1877, 334–335
Scott, W. A. (1862–1944)
Course in economics of agric., School of Economics, Univ. of Wisc., 1892/3–[1902/3], 77–78
Foundations of agric. economics laid at [Univ. of] Wisc. by R. T. Ely and Scott, carried on by H. C. Taylor and B. H. Hibbard, 79, 287
Is there a distinct agric. question? Discussed, 1896, 39–41
Scoville, G. P. (1885–), 359
Farm management survey of Chemung Co., N. Y., 1912, 376, 377
Project leader to train farm management demonstrators, 378
Scudder, H. D. (1881–)
Course in farm management at Corvallis, Ore. in 1907, 81

Seed Loans
See Farm Finance and Agric. Credit, 921–922
Seligman, E. R. A. (1861–1939)
Agric. problem, 1896, 42
Seneca Co., N. Y.
See New York State
Sering, M. (–1939)
Taylor studied with, at Univ. of Berlin, 1900–1901, 782
Severance, G. (1874–), B. Hunter and P. Eke
Farming systems for eastern Wash. and northern Idaho (1930), 467
Shantz, H. L. (1876–) and R. Zon (1874–)
Natural vegetation (1924), 317
Shear, S. W. (1892–)
Economic aspects of the pear industry [of Calif.] (1928), 473
and H. F. Gould. Economic status of the grape industry [of Calif.] (1927), 471–472
Shearman, T. G. (1834–1900)
Taxation; revision of legislation, 1896, 43, 994
Sheep
Peffer, W. A. Expansion of sheep industry urged. *In his* Agric. depression, 1894, 23
Taylor, H. C. Sheep industry an example of historical study of economic forces, 1840–1900. *In his* Place of economics in agric. (1911), 279–280
Sheep Marketing Research
Coffey, W. C. Market classes and grades of sheep (1908), 547
Shepard, J. B. (1884–)
Crop Reporting Bd., U.S.D.A., 251, 357
Shepard, W.
joint author. See Gray, L. C.; Baker, O. E., *et al.*, 852, 863
Shepherd, G. S. (1898–)
Burden of increased costs of distribution (1932), 502–503
Does Iowa "dump" its grain? (1929), 502
When shall we sell our corn? (1929), 501
Shepperd, B. E.
Influence on H. C. Taylor at Drake Univ., 75
Shepperd, J. H. (1869–1939)
Mentioned, 75
Sherman Act of 1890
Effect of (Sumner), 37
Sherman, C. B.
Legal basis for the marketing work of U. S. Dept. of Agric. (1937), 532 533, 544–546
Summary of reaction in Congress to Dept. of Agric. (1937), 532–533
Sherman, R. W. and C. G. McBride
Market analysis of farm sales of milk to dealers in four Ohio cities (1932), 758
Sherman, W. A. (1868–1939)
Merchandising fruits and vegetables (1928), 638
Shreveport, La.
Critchfield, B. H., *et al.* Agric. situation in the Shreveport trade area (1926), 466
Shu Ching Lee
Theory of the agric. ladder (1947), 820
Silver Coinage
Agric. depression remedy. Emerick, C. F. *In his* Analysis of agric. discontent (1897), 45
Free and unlimited coinage. National Farmers' Alliance; proposal, 7
National Grange. Committee on Finance. Rept., 1894, 10
Committee on Legislation. Statements, 1890, 9
Resolutions, 1889, 1891, 1896, 8, 9, 11
Philosophy of movement in favor of coinage (Laughlin), 39
Remonetization (George). *In his* Condition of cotton growers (1892), 27
Restoration (Peffer). *In his* Agric. depression, 1894, 25
Sinclair, J. (1754–1835)
Pres. Bd. of Agric. of Eng., 282
Size of Farms, 143–153
Bailey, L. H. *In his* The harvest (1927), 150
Black, J. D. *In his* Introduction to production economics (1926), 152–153
Carver, T. N. *In his* Principles of rural economics (1911), 150–151
Holmes, C. L. *In his* Economics of farm management (1928), 153
Hunt, T. F. *In his* How to choose a farm (1906), 146–147
Taylor, H. C. *In his* Introduction to the study of agric. economics (1905), 143–146
Warren, G. F. *In his* Farm management (1913), 147–150
Willcox, W. F. Census data, 1880, 1890, 1896, 43
AREA STUDIES
Chester Co., Penn.
Spillman, W. J., H. M. Dixon and G. A. Billings. *In their* Farm management practice of Chester Co. (1916), 151–152, 319–320, 368–369, 374
Livingston Co., N. Y.
Warren, G. F. and K. C. Livermore. *In their* Agric. survey . . . Tompkins Co. (1911), 147, 357, 360, 362, 365, 807–808
Skinner, H.
Hope of the South (first suggestion made for sub-treasury plan), 1889, 6
Landed basis for our national bank issue, 1889, 6

Slater, D. J.
Market classes and grades of cattle (1927), 713
Smith, A. (1723–1790), 71
Mentioned, 154
Smith, B. B.
Factors affecting price of cotton (1928), 454, 456
Smith, C. B. (1870–1948)
Origin of farm economics extension, (1932), 377
What this meeting teaches in farm management demonstration. Amer. Farm Management Assn. meeting, 1914, 379–380
Smith, R. A. (1876–)
Land economic survey in Mich. (1926), 864
Snow, B. W.
Cost of growing corn actually determined (1897), 394
Outlook conference, 1923, 449
Some estimates of wheat cost (1894), 393
Snyder, C.
Outlook conference, 1923, 449
Social Science Research Council
Bulletins, 1930–1933
1. Research in public finance in relation to agric.—scope and method (1930), 1019–1020
3. Research in agric. credit (1931), 963–964
13. Research in farm management (1932), 161
14. Research in agric. insurance (1932), 990
16. Research in farm labor (1933), 894
Soil Research
Davis, I. G. and C. I. Hendrickson. Soil type as a factor in farm economy. 1. Town of Lebanon [Conn.] 1922–1923 (1926), 375–376
Lang, E. Law of the Soil. Part 2. Law of diminishing returns (Spillman and Lang). (1924), 141
Lowden, F. O. Soil conservation; presidential address Amer. Country Life Conference, 1930 (1931), 478–479
Roberts, I. P. Fertlity of the land (1897), 101
South Carolina
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
City Studies
Greenville trade area. *See* Farm Management Research: Home Market Adjustment
Cotton
Acreage, count system applied in 1919 (Hare), 241
Cost of cotton grown; 1920 records, 423
Farm management research. *See that title*
Historical surveys
Logan, J. H. History of upper country of S. C. Vol. 1 (1859), 286
Ruffin, E. Rept., and questionnaire, of commencement and progress of agric. survey of S. C. for 1843 (1843), 342–345
South Dakota
Mortgages
Farm mortgage situation (Johnson and Steele). (1933), 967–968
State College of Agric. and Mechanic Arts
Circulars. *See* Government Studies, U. S. State Level
Wheat
Cost of wheat grown; 1920 records, 423
Southern States Assn. of Markets
Proceedings (1914), 686
Resolution in favor of a market news service and cooperative marketing agencies. *In*: Texas Dept. of Agric. Bulletin 36, 567–568
Southern States of U.S.
Census of U. S.; plantation tenure statistics carried in greater detail than before in 13th Census, 1910, 274
Gray, L. C. Genesis and expansion of plantation system . . . during colonial period (1911), 310
and E. K. Thompson. History of agric. in the Southern States to 1860. 2 vols. (1933), 310–313
Hammond, M. B. Pre-Civil war financing of Southern agric. *In his* Cotton industry (1897), 903–905
Loring, F. W. and C. F. Atkinson. Cotton culture in the South (1869), 288
Olmsted, F. L. [Travels in the Southern States, 1852–1860; works published by Olmsted.] *See* Olmsted, F. L.
Phillips, U. B. Economic cost of slave holding in the Cotton Belt (1905), 313
Economics of the plantation (1903), 313
Life and labor in the old south (1929), 314–315
Spahr, C. B. (1860–1904)
Essay on present distribution of wealth in U. S. (1896), 107
Sparhawk, W. N.
joint author. See Hibbard, B. H., 868
Sparks, E. S.
History and theory of agric. credit in U. S. (1932), 899–902

Spencer, L. (1896–)
Economic study of rural store credit in N. Y. (1924), 954–956
Economic survey of Los Angeles milk market (1931), 754–755
joint author. See Norton, L. J., 735
Spillman, W. J. (1863–1931)
Agricultural ladder (1919), 822–824
American Farm Management Assoc.
Participated in organization, 1910, 84
Scope and Cleavage Committee, member, 85
Dot maps (*in* Farm grasses of U. S.). (1905), 303
Farm Management Office, chief, 1908–1918, 420, 422
Farm management work in U.S.D.A. started in 1902, 81
Lectures — Graduate School of Agric., 1910, 84
Mentioned, 316
Works cited
Farm grasses (1905), 303
Farm management practice of Chester Co., Pa. (1916) with Dixon and Billings, 151–152, 319–320, 368–369, 374
Farm ownership and tenancy, 1923 (1924) with L. C. Gray, C. L. Stewart, H. A. Turner, and J. T. Sanders, 851, 869
Farm tenancy in the U. S., 1916, (1917) with E. A. Goldenweiser, 822
Law of diminishing increment, *in* Law of diminishing returns (1924) with E. Lang, 140–141
Study of farm practice vs. field experiments (1912), 368
Work of the Office of Farm Management relating to land classification and land tenure, 1917, (1918), 822, 861
Statistics
International Institute of Agriculture. *See that title*
International Statistical Institute
Bienn. meeting, Rome, 1887. J. R. Dodge, Amer. member; present, 193, 254
Precursor of International Institute of Agric., 193–194
Murray, N. C. Close-up view of development of agric. statistics, 1900–1920 (1939), 208, 216, 220, 484
National Board of Trade. Committee of Inquiry on Agric. Statistics. Investigation of agric. statistics. Work of Census office and of Statistics Div. U. S. Dept. of Agric., 1902, 214
Russell, A. Principles of statistical inquiry . . . (1839), 123, 259
U. S. Congress. Committee on Patents (House). Letter, Jan. 21, 1839; proposal for agric. statistics, 170
Dept. of Agric. Bureau of Statistics. Succeeded Div. of Statistics, July 1, 1903; reorganization, 215
Div. of Statistics, 1897–1905. (Hyde, statistician). Ann. rept. 1st (1898), 209
Criticism of work of, under J. R. Dodge and H. A. Robinson by National Bd. of Trade, 203–207
Walker, F. A. Statistical atlas of U. S., based on results of census of 1870 (1874), 260
Statistics of agric. census of U. S. 10th, 1880. Agriculture (1883), 262–263
Statistics, classified
Acreage estimates. *See that title*
Census data. *See* Census of U. S.
Cost accounting. *See that title*
Cotton acreage. *See* Acreage Estimates
Cotton crop. Keep Commission and Census Bureau estimates, 222–225
Counties; acreage discrepancy, 221
Crops. *See* Crop Reporting
Fruit production estimates. *See that title*
Livestock. *See* Livestock Estimates; Livestock Reporting
Par system. *See* Par System Estimates
Vegetables. *See* Vegetable Crop Reporting
Steele, H. A.
joint author. See Johnson, S. E., 968
Stern, J. K.
Membership problems in a milk marketing organization (1930), 750
Stevens, W. M.
Marketing and distribution of American-grown Bermuda onions (1925), 711–712
Stewart, C. L. (1890–)
Analysis of investigation of rural banking conditions in Ill. (1914), 929
, L. J. Norton and L. F. Rickey
Market destinations of Ill. grain (1928), 740
joint author. See Gray, L. C., *et al.*, 851–852, 869; Mumford, H. W., *et al.*, 466, 743; Norton, L. J., 740, 741
Stine, O. C. (1884–), 304
Historical-geographical atlas project, Office of Farm Management, 316
Stokdyk, E. A. (1897–)
Some factors influencing the mid-season potato market (1931), 726
and G. M. Reed. Standard packs, packages and grades for Kans. fruits and vegetables (1926), 726

Stokdyk, E. A. (*cont.*)
, H. E. Erdman, C. H. West and F. W. Allen. Marketing Calif. apples (1930), 754
joint author. See Green, R. M., 725–726; Tinley, J. M., 698
Stone, W. E.
Committee on instruction in agric., 89
Strawberries
Cooperatives. *See* Cooperative Marketing Research
Thomsen, F. L. and G. B. Thorne. Economics of strawberry production and marketing in Mo. (1928), 476
Strong, H.
American landlordism (1886), 772
Strong, J. (1847–1916)
Problems of the country: chapter *in his* New era; influence on H. C. Taylor, 769
The new era (1893), 289, 775, 776
Stubenrauch, A. V.
Marketing work plans conference, 535, 536
Sub-Treasury Plan
Hope of the South (Skinner), 1889; contains early suggestion for subtreasury plan, 6
National Grange opposed to, 11
Noblin, S. Sub-treasury plan. *In his* Polk, agrarian crusader (1949), 6
Subsidy Plan (Lubin)
Republican State Convention of Calif.; platform plank (1894), 15
Sugar Beet Industry
Germany, 115
Indian corn competition, 116
Moorhouse, L. A. and S. B. Nuckols. Cost of producing sugar beets in Utah and Idaho, 1918–1919 (1921), 423, 424
Peffer, W. A. Culture of sugar beet advocated. *In his* Agric. depression, 1894, 23
Taylor, H. C. Conditions affecting sugar beet culture in U. S. (1903), 118, 403
Place of sugar beet in farm enterprises of U. S.; study of, 115–117
Sugar Industry
Rutter, F. R. International sugar situation (1904), 525
Sukow, Ruth
Renters (1923), 828
Sumner, W. G. (1840–1910)
Cause and cure of hard times (1896). Repr., 1918, 37
Surpluses
Reduction suggested by F. O. Lowden, 478
Surveys, 326–387
See also Farm Management: Survey area studies
Swanson, C. O.
joint author. See Call, L. E., 614, 725
Swarthout, A. V.
Farmers' cooperative business study — the staple cotton cooperative assoc. (1926), 646
joint author. See Jesness, O. B., *et al.*
Swenehart, J.
joint author. See Hibbard, B. H., 868, 1018
Swenson, O. J.
Cooperative cheese factory, 557
Swine Marketing Research
See Hog Marketing Research

T

Taber, R. F. and C. R. Arnold
Labor required for crop production in Ohio, 1922–1923, 402
Tapp, J. W. (1900–)
Cost accounting conference, 1923, 428–432
joint author. See Grimes, W. E.; Pond, G. A.; Taylor, H. C., 121, 140, 320, 433, 437, 442
Tariff
Emerick, C. F. Tariff revision remedy for agric. depression. *In his* Agric. discontent, 1896–1897, 45
Taussig, F. W. (1859–1940)
"Bulk line" price fixing theory, 498
Taxation, 991–1020
Brannen, C. O. and J. T. Sanders. Taxation of rented farms (1925), 1001
Drew, F. M. Early farm organization views on taxation. *In his* Present farmers' movement (1891), 993–994
Ely, R. T. Robber taxes (1924), 999–1000
Emerick, C. F. General property tax remedy for agric. depression. *In his* Agric. discontent, 1896–1897, 45
Englund, E. Federal aid as part of . . . agric. policy — special reference to distribution of tax levies (1926), 1007
Fairchild, F. R., and Associates. Forest taxation in U. S. (1935), 865
Hibbard, B. H. Exemption from tax of public lands granted to States. *In his* History of public land policies (1924), 991–992
and B. W. Allin. Tax burdens compared, farm–city–village (1927), 1013–1014
Isaac, G. J. Tax preference for homesteads (1939), 1017
Jackson, C. D. Trend and present status of rural tax delinquency (1938), 1019
Johnson, O. M. and B. W. Allin. Exemption of homesteads from taxation (1925), 1017

Kendrick, M. S. Collection of general property taxes on farm property in U. S. — emphasis on N. Y., (1928), 1009
Local government and taxation; review, 991–1020
Mathews, N. Double taxation of mortgaged real estate (1890), 776
Olsen, N. A., *et al.* Farm credit, farm insurance and farm taxation, 1924 (1925), 944–946, 983, 1002
Robinson, H. A. Local taxation as affecting farms (1897), 994–995
Shearman, T. G. Revision of tax legislation recommended. Address, 1896, 43
Taylor, H. C. Double taxation. *In his* Intro. to study of agric. economics (1905), 996
Progressive land tax. *In his* Agric. economics (1919), 996
U. S. Bureau of Agric. Economics. Program of research in field of farm taxation, 1922–1926, 1000–1001
Census Bureau. Taxes on farm property in U. S. 15th Census, 1930 (1933), 1004
Wallace's Farmer. Poll of farmers' views on tax reform (July 27, 1923), 999
Warren, G. F. Why taxes are high, (1926), 1008–1009
Wehrwein, G. S. and B. W. Allin. Possible farm tax reduction through changes in local government (1933), 1014

AREA STUDIES

Illinois
Ill. Agric. Assn. Protest to Ill. Tax Commission against increased land valuation, 1921, 997
Taxation of farm lands in Ill. Rept. (1922), 997
O'Brien, H. R. Ill. gets the facts (1924), 997–999
Indiana
Brannen, C. O. and R. W. Newton. Taxation of farm real estate in Ind. (1925), 1001
Kansas
Englund, E. Assessment and equalization of farm and city real estate in Kans. (1924), 1005
Program of taxation for Kans. (1923), 1005
Tax revision in Kans. (1924), 1006
Trend of real estate taxation in Kans., 1910–1923 (1925), 1006–1007
Michigan
Newton, R. W. and W. O. Hedrick. Farm real estate practices in Mich. (1928), 1015
New York State
Kendrick, M. S. Collection of general property taxes on farm property in U. S. — emphasis on N. Y. (1928), 1009
Collection of taxes by State of N. Y. — division of these revenues with units of local government (1930), 1012–1013
North Carolina
Forster, G. W., *et al.* Farm income and taxation in N. C. (1928). (1929), 1015–1016
Ohio
Johnson, O. M. Index numbers of farm taxes in Ohio, 1880–1924 (1925), 1007
Texas
Buechel, F. A. Trend of taxes on agric. land in Texas and distribution of farmer's tax dollar (1925), 1008
Wisconsin
Hibbard, B. H., *et al.* Tax delinquency in northern Wisc. (1928), 868, 1018
Use and taxation of land in Lincoln Co., Wisc. (1929), 868

Taylor, A. E. (1871–1949)
Your inelastic appetite (1924), 695
Taylor, C. C.
joint author. See Maxton, J. L., 762
Taylor, Cecil
re universal cotton standards, 620, 623, 625
Taylor, H. C. (1873–)
Archives; cited, 61, 86, 271, 353, 557, 558, 562, 563, 770
Census of Agric., 1909, 1910, 270–274
Correspondence
Bailey, L. H. to Taylor. July 18, 1939 (Mich. Agric. College; Fairchild), 72
Case, H. C. M. to Taylor. March 13, 1947 (Davenport), 60
Forster, G. W. to Taylor. Dec. 12, 1946 (Taylor's capacity and efficiency theory), 439
Ross, R. C. to Taylor. June 26, 1927 (Davenport), 60
Russell, Dean L. H. to Taylor (need of overall picture of marketing of agric. products). Jan. 13, 1913, 556
Taylor, H. C. to Dean College Agric. Univ. of Wisc., L. H. Russell (suggesting program for clarifying terminology of agric. economics). Nov. 4, 1910, 89
to A. C. True (terminology of agric. economics) Nov. 4, 1910, 89
to Dean L. H. Russell (policy of Univ. of Wisc. on marketing function). Jan. 18, 1913, 558

Taylor, H. C. (*cont.*)
Correspondence (*cont.*)
to Dean Russell (modification of policy of College of Agric. Univ. of Wisc.). April 15, 1918, 561–563
to G. F. Warren (farm management as part of agric. economics). Nov. 4, 1910, 86–89
Warren, G. F. to Taylor (farm management as part of agric. economics). Nov. 2, 1910, 86–89
Cost accounting conference, 1923, 428–432
Works cited
1893. The future farmer; unpub. ms., 1893, 770
1898–1908
Conditions affecting sugar beet culture in U. S. (1903), 118, 403
Decline of land-owning farmers in England (1904), 289, 351, 780–782
Economic problems in agric. by irrigation (1907), 133, 837–840
Farm proprietorship in the U. S.; unpub. ms., 1898, 156, 770
Introduction to study of agric. economics (1905), 81, 101–104, 118, 132, 143–146, 156–157, 351, 403, 785–787, 996
Syllabus of lectures on agric. economics (1903), 81, 117–118, 126–129, 143, 403
Tenancy and farm ownership; unpub. thesis, 1898, 771–780, 820
1909–1918
Cost accounting method of studying farm management problems (1911), 404–407
High prices and intensive farming (1918), 137
Lectures on land tenure, 1917, 820
Marketing of Wisc. cheese (Taylor, Schoenfeld and Wehrwein). (1913), 553, 556, 662
Marketing Wisc. potatoes (1915), 555, 556
Methods of renting farm lands in Wisc. (1910), 302, 804–807
Place of economics in agric. education and research (1911), 121, 165, 278–280, 303, 864
Price-fixing and the cost of farm products (1918), 407–408, 555
Prices of farm products (1911), 488–490
Review of Carver's Principles of rural economics, 1912, 133–134
Two dimensions of productivity (1917), 157–158, 820
1919–1925
Adjustment of farm business to declining price levels (1921), 447
Adjustments in farm management to meet marketing situation; address (1921), 448
Agric. economics (1919), 118, 159, 166, 383, 996
Development of Amer. Farm Economic Assn. (1922), 98
Farm economist in Washington, 1919–1925, unpub. ms., 1925, 497–499, 577, 610–612, 621–630, 642–643
Farm labor in Wisc. (Taylor and J. D. Black). (1920), 886
Objectives in agric. cost accounting (1923), 425–427, 439
Outlines of agric. economics (1925), 118, 159, 785–786, 804
Practical farm economics (Taylor, Tolley and Tapp). (1924), 140
Reports as chief of Bureau of Agric. Economics for 1923 and 1924, 249, 453
Statement before House Committee on Agric. on work of Office of Farm Management, Dec., 1919, 317
Statement on solution of farmers' problem, requested by Secy. of Agric. Wallace, Sept. 22, 1923, 592–594
War prices and farm profits (Taylor and Mendum). (1919), 368, 370–371
1926–1943
Introduction to Gray's History of agric. in the South (1933), 310–313
Early history of agric. economics (1940), 858
Richard T. Ely (Taylor and Wehrwein). (1943), 857
Share of agric. in national income (Taylor and Perlman). (1927), 506–509
Vermont Commission on Country Life, Report, 383–384

Taylor, J.
Arator, 283

Taylor, P. R.
joint author. See Berger, A. C., 460

Taylor, P. S. (1895–)
Mexican labor in U. S., 1928–1932, 890

Taylor, W. A.
Comment on yearbooks, 318
Economic council, 602
Marketing work plans, 535

Teele, R. P. (1868–1927), 840–847
Agric. marketing, 1907, 82
Economic problems of irrigation, work of Teele in Office of Irrigation and

Drainage, U. S. Dept. of Agric., 830
Economics of land reclamation in U. S. (1927), 842–846, 859
Reports on irrigation, 13th and 14th U. S. census, 1910, 1920, 830
Review of ten years of irrigation investigation, 1908 (1909), 840–842
Tenny, L. S. (1876–)
Cotton standards, 619, 621, 628
Division of Cooperation, 642, 652
Wool standards, 631, 632
Terminology
Agricultural economics, 81, 84–89, 195
Agricultural economy, 58, 74
Agricultural economy including history and literature, 63
Agronomy, or plant production, 70
Agrotechny, or agric. technology, 70
Comparative agriculture, 60, 67
Controversy of 1910/11; terminology confusion in case of farm management and rural economy, 84–98
Economics of agriculture, 74, 75, 77, 81
Economics of farm management, 68, 81
Farm management, 80–89
Rural economics, 70
Rural economy, 58, 64, 67
Taylor, H. C. Letter to Dean College of Agric., Univ. of Wisc., H. L. Russell; suggesting program for clarifying terminology of agric. economics, 1910, 89
Texas
Agric. and Mechanical College
Bulletins. *See* Government Studies, U. S. State Level
Farmers' short course. *See* Educational Facilities
Agric. credit. *See* Farm Finance and Agric. Credit
Cooperative marketing research. *See that title*
Cost of cotton grown; 1920 records, 423
County studies
Dimmit Co. Mexican labor employment (Taylor, P.), 890
Rockwall Co. Agric. economic survey (Gabbard). (1925), 758–760
Dept. of Agric.
Bulletins. *See* Government Studies, U. S. State Level
Labor, 896
Marketing research studies. *See* Marketing Research
Taxation. *See* Taxation
Vegetable markets in Lower Rio Grande Valley. *See* Vegetable Marketing Research
Winter Garden District Mexican labor (Taylor, P.), 890
Thacher
Editor Amer. Orchardist, 283
Thaer, A. (1752–1828)
Einleitung zur Kentniss der englischen Landwirtschaft. 3 vols., 1798–1804, 116, 332
Theses
Columbia Univ.
Principles in secondary agric. education (Higbie). (1921), 159–161
Progress in . . . budgeting method of planning in agric. economics (Hutson). (1930), 441
Iowa State College of Agric. and Mechanic Arts
Tenancy and farm ownership (H. C. Taylor), 1898, 771–780, 820
University of Minnesota
Critical review of research in land economics (Salter). (1948), 852, 856–870
University of Wisconsin
Agrarian revolution in Ga., 1865–1912 (Brooks). (1914), 299–302
Agric. production in U. S., 1840–1860 (Falconer), 1914, 304
Decline of land-owning farmers in England, 1902 (Taylor). (1904), 289, 351, 780–782
Genesis and expansion of plantation system in the southern states . . . during the colonial period (Gray), 1911, 310
Industrial history of Valley of Red River of the North (Coulter). (1910), 297–299
Wheat growing industry in Wisc. (Thompson). (1909), 292–294
Thompson, C. W. (1879–1920)
Director Minn. Bureau of Research in Agric. Economics, 1911–1913, 550, 862
Specialist in rural organization brought into Office of Markets and Rural Organization, U. S. Dept. of Agric. in 1913, 230, 924
Works cited
Costs and sources of farm-mortgage loans in U. S. (1916), 925–926
Factors affecting interest rates and other charges on short term farm loans (1916), 926–927
Federal Farm Loan Act (1917), 919–921
How farmers may improve their personal credit (1915), 927–928
How the Federal Farm Loan Act benefits the farmer (1917), 928
Statement on rural credit before sub-committee House Banking and Currency Committee during hearings on rural credits, Dec. 3–4, 1913 (1913), 924–925
Studies in egg marketing (1913), 550
joint author. See Truesdell, L. E.
Thompson, E. K.
Assistant of L. C. Gray. *See* Gray, L. C.

Thompson, J. G.
Rise and decline of wheat growing industry in Wisc. (1909), 292–294
Thompson, R. L. (1891–)
joint author. See Critchfield, B. H., *et al.*, 466
Thompson, S. H.
Training with Scoville, 378
Thompson, W. O. (1855–1933)
Hunt plan for graduate school of agric. approved by Pres. of Ohio State Univ., 1900, 71
Thomsen, F. L.
Cooperative marketing of fruits and vegetables on the St. Louis market (1927), 701
and W. R. Fankhanel. Factors affecting sweet potato prices in Mo. (1931), 476
Livestock trucking in Mo. (1932), 764
and W. H. E. Reid. Developing new markets for Mo. butterfat (1929), 702
Factors involved in buying Mo. cream (1930), 702–703
and G. B. Thorne. Cooperative marketing for Mo. (1927), 701
Economic position of grape industry in Mo. (1929), 476
Economics of strawberry production and marketing in Mo. (1928), 476
joint author. See Hart, W. J., 703; Richards, P., 763–764
Thomson, E. H. (1887–)
Agric. surveys of four townships in N. H. (1911), 366
Comment on I. P. Roberts, 1939, 74
Selecting a farm (1920), 111
and Dixon, H. M. Farm management survey of three representative areas in Ind., Ill. and Iowa (1914), 366–367, 810
Thorne, C. E. (1846–1936)
Relative cost of beef and butter, 1893, 393
Thorne, G. B. (1901–)
joint author. See Thomsen, F. L., 476, 701
Tinley, J. M. and E. A. Stokdyk
Operations of the Poultry Producers of Southern Calif. (1931), 697–698
Tobacco Industry
Dodge, J. R. Statistics of manufacture of tobacco. Census of U. S. 10th, 1880, Agriculture (1883), 263
Financing. *See* Farm Finance and Agricultural Credit
Killebrew, J. B. Culture and curing of tobacco in U. S. Census of U. S. 10th, 1880. Agriculture (1883), 263
Tobacco Marketing Research
Ballinger, R. A. and J. L. Maxton. Marketing Va. tobacco (1932), 762–763
Bohannan, C. D. and D. F. Campbell. Preliminary study of marketing of Burley tobacco in central Ky. (1916), 565
Cooperatives. *See* Cooperative Marketing Research
DeVault, S. H. Supply and distribution of Conn. Valley cigar leaf tobacco (1919), 564
Jesness, O. B. Marketing of tobacco (1928), 722–723
Tolley, H. R. (1889–)
Cost accounting conference, 1923, 428–432
History and objectives of outlook work (1931), 453
and M. J. B. Ezekiel. Method of handling multiple correlation problems (1923), 456
J. D. Black and M. J. B. Ezekiel. Input as related to output in farm organization and cost-of-production studies (1924), 138–140, 442–445
joint author, See Taylor, H. C., 140
Tomato Marketing Research
Gaylord, F. C. and H. M. Cleaver. Buying tomatoes on grade, 1928 (1929), 639
Grading tomatoes for quality (1927), 639
and J. H. McGillivray. Buying tomatoes on grade, 1929 (1930), 639
Hauck, C. W. Marketing cannery tomatoes on grade in Ohio (1932), 757
Tompkins County, N. Y. Survey
See New York State, 360
Townshend, Charles (1674–1728)
Viscount. Popularized turnips and clover in Norfolk, Eng., 116, 329
Townshend, N. S.
Prof. of agric., Univ. of Ohio, succeeded by T. F. Hunt, 1901, 66
Trans-Mississippi States
See Western States
Transportation Business
Consolidation; Peffer rept., 1894, 25
Truckage
See Marketing Research
True, A. C. (1853–1929)
Comment on repts. of Committee on Methods of Teaching Agric., Assoc. of Amer. Agric. Colleges and Exp. Stas., 71
Correspondence; H. C. Taylor to True, 1910, 89
Editorial Exp. Sta. Record, Oct. 23, 1910; value of course on economic and social aspects of agric. given at 4th session of Graduate School of Agric. (1910), 83–84
History of agric. education in U. S., 1785–1925 (1929), 71

History of agric. experimentation and research in the U. S., 1607–1925 (1937), 179, 606, 615
Solidarity of town and farm (1897), 774
True, R. H. (1866–1940)
Jared Eliot, minister, physician, farmer, 1748–1762 (1934), 339
Part of True in organization of Agric. Historical Society in 1919, 317
Trueman, J. M.
Milk supply of Chicago and 26 other cities (1907), 547
Truesdell, L. E. and C. W. Thompson
Amortization methods for farm mortgage loans (1916), 928
Tubbs, M. W.
Amer. Socy. of Equity in Wisc., 559, 560
Tucker, C. K.
Cost of handling fluid milk and cream in country plants (1929), 736
Tucker, L.
Editor Cultivator, 259
Tugwell, R. G. (1891–)
joint editor. See Carman, H. J.
Tull, J. (1674–1741)
The new horse-houghing husbandry (1731), 329, 338
Turner, F. J. (1861–1932)
Mentioned, 290
Problems in Amer. history (1892), 285
Significance of the frontier in Amer. history, 1893 (1894). Repr. (1920), 285–287, 857
Social forces in Amer. history (1911), 280–281
Turner, H. A.
joint author. See Gray, L. C., C. L. Stewart, *et al.*, 869
Turnpikes
Hedrick, U. P. Seneca Turnpike, "Genesee Pike," "Ohio Trail." *In his* History of Agric. in N. Y. State (1933), 323–324

U

United States
Congress. Publications. *See* Government Policies, U. S. Federal Level
Departments, Bureaus, Commissions and other agencies of the Government. *See* Government Studies, U. S. Federal Level
Legislation. *See* Government Policies, U. S. Federal Level
President. Addresses. *See* Coolidge; Cleveland; Harding, mentioned. *See* Harrison; McKinley; Roosevelt, F. D.; Roosevelt, T.; Van Buren; Wilson
Universal Standards for Amer. Cotton, 618–630
Urban v. Rural Adjustment
See Rural v. Urban Adjustment
Utah
Moorhouse, L. A. and S. B. Nuckols. Cost of producing sugar beets in Utah and Idaho, 1918–1919 (1921), 424

V

Valgren, V. N. (1876–)
Works cited
Agric. Credits Act of 1923 (1923), 949–950
Crop insurance: Risks, losses and principles of protection (1922), 985–986
Developments and problems in farmers' mutual fire insurance cos. (1928), 983
Farmers' mutual fire insurance, 1916, 979–980
Farmers' mutual fire insurance in Minn. (1911), 978–979
Hail insurance on farm crops in U. S. (1920), 984
Historical sketch of farmers' mutual fire insurance (1945), 976–978
Insurance and the farm risk problem (1944), 976, 989–990
Insurance needs of agric. Address (1931), 976
Methods of farmers' mutuals (1933), 988
Organization and management of a farmers' mutual fire insurance co. (1917), 980
Prevailing plans and practices among farmers' mutual fire insurance cos. (1919), 981
Suggestions for a state law providing for organization of farmers' mutual fire insurance cos. (1920), 981–982
System of records for local farmers' mutual fire insurance cos. (1920), 982
and E. E. Engelbert. Bank loans to farmers on personal and collateral security (1922), 938, 939, 940
Credit assoc. as an agency for rural short-time credit (1921), 938
Farm mortgage loans by banks, insurance cos. and other agencies (1921), 939
Van Buren, Martin (1782–1862)
Suggested agric. statistics, 1840 census, 258–259
Van Hise, C. R. (1857–1918)
Address at first National Conference on Marketing and Farm Credits, Chicago, 1913; summary, 559, 560, 561
Concentration and control, solution of trust problem in U. S., 1912, 559
Conservation of natural resources in U. S. (1910), 857
Van Scoik, R. H. (1888–)
Training with Scoville, 378

Vegetable Crop Reporting
Number of crops for which condition and forecasts of production, intended acreage, acreage planted and harvested are gathered, 246
Problems of competition, harvesting and shipping, 246
Production area changes since World War I, 246
Vegetable Marketing Research
Cooperatives. *See* Cooperative Marketing Research
Inspection service, 636–637
Lloyd, J. W. and H. M. Newell. Causes of damage to fruits and vegetables during shipment (1932), 743
Market News Service operation, 634
Shearman, W. A. Merchandising fruits and vegetables (1928), 638
Standardization
Containers for fruits and vegetables, 637
Packs, packages and grades for Kans. fruits and vegetables (Stokdyk and Reed). (1926), 726
AREA STUDIES
Connecticut
Davis, I. G. and F. W. Waugh. Conn. market for vegetables (1926), 464–465
Kansas
Stokdyk, E. A. and G. M. Reed. *See above* Standardization
New York State
Corbett, R. B. Economic study concerning operations of fruit and vegetable shippers of western N. Y. (1926), 734
Walker, D. Production and marketing of N. Y. peas (1929), 734–735
Texas
Crawford, G. L. Services, facilities and costs of marketing vegetables in the lower Rio Grande Valley of Texas (1928), 761
Vermont Commission on Country Life
Rural Vt. — A program for the future, 1928–1931 (1931), 383–384
Vernon, J. J., T. D. Johnson, and W. O'Byrne
Adjustment of agric. production to meet home market demands in the Clifton Forge — Covington trade area (1929), 466
and R. S. Kifer. Market for milk in Richmond, Va. (1928), 761–762
and H. I. Richards. Agric. situation in Roanoke [Va.] and its trade territory (1925), 466
Virginia
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
City Studies
Clifton Forge. Home market adjustment (Vernon, Johnson and O'Byrne). (1929), 466
Covington. Joint study with that of Clifton Forge. *See above*
Richmond. Milk markets (Vernon and Kifer). (1928), 762
Roanoke. Agric. situation (Vernon and Richards). (1925), 466
Dairy Industry
Maxton, J. L. Manufacturing and marketing dairy products in Va. (1931), 762
Marketing research studies, 1928–1932, 761–763
Milk marketing. *See* Milk Marketing Research
Tobacco. *See* Tobacco Marketing Research
Voorhies, E. C. (1892–)
Calif. poultry industry: statistical study (1926), 470
Economic aspects of the [Calif.] dairy industry (1927), 472
Vrooman, C. S. (1872–)
Asst. Secy. of Agric., 253

W

Wages of Farm Labor, 873–882
Bean, L. H. Post-war interrelations between agric. and business (1930), 881
Dodge, J. R. Series of repts. on wages of farm labor in U. S., 1866–1892; summary (1892), 873–880
Falconer, J. I. Index numbers of production, wages and price (1925–1926), 889
Holmes, C. L. Wages of farm labor (1922), 887–889
Holmes, G. K. Wages of farm labor (1912), 880–881
Index of farm wages, 1893–1933, 881
Olmsted, V. Farm wage rate investigations, 1910, 881
Reports, 1845–1909, reviewed, 873–882
U. S. Commissioner of Patents, rept. 1845; wages of farm labor, 873
Wagner, P.
Mentioned, 141
Walker, C. S.
Farm problem; outlook, 1896, 43–44
Farmers' Movement. Article in Annals, 1894, 35–36
Statement at meeting of Amer. Economic Assoc. on farmers' pecuniary condition, 1892, 32–33
Walker, D.
Production and marketing of N. Y. market peas (1929), 734–735
Walker, F. A. (1840–1897)
Director of 10th census of U. S. 1880
Expansion of census of agric. attributed to Walker, 258, 259
Initiates statistical study of farm ownership and tenancy, 769–770, 775

Mentioned, 71, 189
Works cited
Amer. agric. (1882), 112–113, 284
Differential profits theory. *In his* Political economy. Ed. 3 (1888), 155
Land and its rent (1883), 778
Political economy. Ed. 3 (1888), 155, 775
Report on productions of agric. 10th U. S. census, 1880. Agriculture (1883)
Acreage and other new crop statistics, 261, 263
Choice of crops, 112–113
Statistical atlas of U. S. based on results of 1870 census, 1874, 260
Wall, N. J.
Farm finance, 897–1020
Federal seed-loan financing (1936), 922
Wallace, B. A.
Cooperative livestock marketing in Ohio (1924), 664
Wallace, Henry (1836–1916)
Farm ownership and tenancy. *In* Wallaces' Farmer, 1900–1905, 796–804
Member, Country Life Commission, 1908, 353
Wallace, H. A. (1888–)
Agric. prices (1920), 494–497
Ever normal granary idea (1930's) anticipated *in his* Agric. prices (1920), 496
Outlook conference, 1923, 449
Outlook service, 1933, 452
Ratio method of price determination, 494–495
Wallace. H. C. (1866–1924)
Address on cooperative marketing, Feb. 18, 1924, 649–651
Crop insurance proposal, 1922, 986
Livestock statistics to be gathered by rural mail carriers, 246, 247
Plans for new type of yearbook, 317–319
Position on cooperative marketing problem, 642, 643
Secretary of Agriculture, U. S., 1921–1924, 602
Statement concerning agric. situation, 1923, 590, 596, 599
Statement of policy, 591–592, 643–644
Taylor, H. C. Wallace's search for remedies for low prices, 1925, 591–592
Wallaces' Farmer, 1900–1905, 796–804
Walworth County, Wisc.
See Wisconsin
Ward, E. G. jr.
Methods and routes for exporting farm products (1904), 525
Ward, L. F. (1841–1913)
Farm problem: migratory population phase, 1896, 44–45
Ruralization and urbanization. Address before Amer. Economic Assn., 1896, 44–45
Warren, G. F. (1874–1938), 356
1902. Warren enters Cornell as student of L. H. Bailey, 358
1907. Course in farm management at Cornell under Warren, succeeding T. F. Hunt, 81
1908. Speaker at Graduate School of Agric., 2d session, 83
1909. Work on census schedule for 1910, 270–272
1910. Participated in organization of Amer. Farm Management Assn., 84
1911. Member of committee on reorganization of office of farm management, 422
Position in 1910/11 controversy over "farm management" and "rural economics" terminology cleavage, 91
Correspondence with H. C. Taylor about terminology, 86–89
Outlook conference, 1923, 449
Works cited
Agric. surveys (1914), 358, 360, 362
Ann. rept. Agric Exp. Sta., Cornell Univ., 1918/19, 492
Apple orchard survey of Wayne Co., N. Y. (1905), 359
Crop yields and prices and our future food supply (1914), 490
Farm management (4 Cyclo. Amer. Agric.). (1909), 91
Farm management (1913), 97, 111, 119, 135, 147–150, 411–412, 808
Origin and development of farm economics in U. S. (1932), 74, 347
Prices of farm products (1920), 492–493
Prices of farm products in U. S. (1921), 493–494
Relation of farm management and marketing to economics (1922), 669
Some important factors for success in general farming and in dairy farming (1914), 363
Some purposes and results of price fixing (1919), 491–492
Summary of Tompkins Co. survey; ann. rept. Dept. Farm Management and Farm Crops, Cornell Univ., 1911, 363
Why taxes are high (1926), 1008–1009
and K. C. Livermore. Agric. survey—townships of Ithaca, Dryden, Danby and Lansing, Tompkins Co., N. Y. (1911), 147, 357, 360, 362, 365, 807–808
Agric. survey—townships of Ulysses, Enfield and Newfield, Tompkins Co., N. Y. (1911), 357

Warren, G. F. (*cont.*)
Notes from agric. survey in Tompkins Co. (1911), 357, 808
"Productive-man-work units" or "man-equivalent"; idea developed in 1912, 364
and F. A. Pearson. The agric. situation (1924), 494
Prices (1933), 494
Warren, S. W. (1907–)
Economic study of agric. in northern Livingston Co., N. Y., (1932), 364, 365
Multiple correlation analysis as applied to farm-management research (1932), 375
Washburn, R. S. (1887–)
joint author. See Cooper, M. R.
Washington, George (1732–1799)
Correspondence with A. Young, 1786–1794, 121, 330, 337, 340–342
Letter to A. Young (intensity of culture), Dec. 5, 1791, 122
Writings . . . 1745–1799. Vol. 29–31, 340–342
Washington Co., Ohio
See Ohio
Washington, State
Farm management research. *See that title*
Prunes. *See* Prune Market
Waters, H. J.
Committee on Instruction in Agric., 89
Watkins, J. L.
Cost of cotton production (1899), 394
Watrud, H. O.
Took training with Scoville, 378
Watson, J. C.
Taxation of farm lands, 997
Waugh, F. V. (1898–)
joint author. See Davis, I. G., 464–465
Wayland, F.
Elements of political economy, 71–72
Wealth
Spahr, C. B. Present distribution of wealth in U. S. (1896), 107
Webster, E. H.
Address at conference on marketing and farm credits, Chicago, 1913, 560
Amer. Farm Management Assoc. organization participant, 1910, 84
Course in farm management, Univ. of Kans., 1910, 81
Webster, M. W.
Assoc. Ed. Hoard's Dairyman, 560
Weeks, J. E.
Rural Vt. (1931), 384
Wehrwein, G. S. (1883–1945)
Place of tenancy in a system of land tenure (1925), 828–829
and B. W. Allin. Possible farm tax reduction through changes in local government (1933), 1014–1015
joint author. See Duffy, W. A.; 864
Taylor, H. C., 551–553, 662, 857
Weitz, B. O.
joint author. See Gray, L. C., O. E. Baker, *et al.*, 852, 863
Weld, L. D. H.
Chief Minn. Div. of Research in Agric. Economics, 1913, 550
Statistics of cooperation among farmers in Minn. (1914), 653
Wellman, H. R. (1899–)
Apricots [Calif. product] (1927), 471
and E. W. Braun. Almonds [Calif. product] (1928), 473
Beans [Calif. product] (1927), 472
Oranges [Calif.] (1928), 473
joint author. See Erdman, H. E.
Wells, C. F. (1892–)
Statistics on prices and destinations of Idaho apples (1928), 467
Wells, D. A. (1828–1898)
Downfall of certain financial fallacies (1893), 32
Recent economic changes and their effect (1889), 31
Wentworth, E. W.
Outlook conference, 1923, 449
West, C. H.
joint author. See Stokdyk, E. A., *et al.*, 754
West Virginia
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
City studies
Beckley area. Home market demands (Armentrout). (1930), 461
Clarksburg area. Home market demands (Armentrout). (1926), 461
Wheeling area. Home market demands (Armentrout). (1930), 461
State University. Course in rural economics, 1897–1910. *See* Educational Facilities
Western Economic Assoc.
Address to The People of the U. S., 1889, 266
Agric. indebtedness rept. and plans for 11th U. S. Census, 1890, 266
Legislation providing for collection of information on farm and home ownership and tenancy (Act of Feb. 22, 1890), 266–267
Organizer, B. C. Keeler, 266
Western States
Bundle of Western letters. Testimony from Western Men on Trans-Mississippi conditions (1894), 37
Peck, J. M. New guide for emigrants to the West. Ed. 2 (1837), 286
Weston, N. A. (1868–1933)
Cost of production of corn and oats in Ill. in 1896 (1898), 394
Whately, R. (1787–1863)
Mentioned, 154

Wheat Acreage
National Bd. of Trade. Committee on Crop Repts. Improvements in wheat acreage data commended, 1898, 211
Wheat Belt
Lescohier, D. D. Conditions affecting demand for harvest labor in Wheat Belt (1924), 896
Harvest labor problems (1922), 895–896
Wheat Prices and Futures
Duvel, J. W. T. and G. W. Hoffman. Major transactions in 1926 Dec. wheat future (1928), 504
Speculative transactions in the 1926 May wheat future (1927), 504
Green, R. M. Seasonal fluctuations of wheat prices (32 year series, monthly average). (1925), 725
and E. A. Stokdyk. Judging price risks in marketing wheat, (1927), 725–726
Laughlin, J. L. Price fluctuation cause, 37–39
Lubin price plan, 14
U. S. Grain Futures Administration. Fluctuations in wheat futures (1926), 504
Wheat Marketing Research
Bell, E. J., jr. Marketing high protein wheat (1928), 614
Call, L. E., R. M. Green and C. O. Swanson. How to grow and market high protein wheat (1925), 614, 725
Whitcomb, W. O. and E. J. Bell, jr. Protein test in marketing wheat (1926), 612–613
Wheat Marketing Research, classified
Kansas wheat
Green, R. M. Effects of shortage of farm storage space and inability to get local bank credit on movement of Kans. wheat to market (1927), 725
Farm storage as a factor in marketing of Kans. wheat (1922), 724
Montana wheat
Bell, E. J., jr. Current problems of Mont. farmers' elevators (1930), 614
Larger markets for Mont. wheat, 1927, 613–614
Ohio wheat
Foster, L. G. Some factors affecting movement of Ohio wheat (1930), 757
Russian wheat
Rubinow, I. M. Russian wheat and wheat flour in European markets (1908), 525
Russia's wheat trade (1908), 525
Wheat Production Research
Cost of growing wheat. *See* Cost Accounting
Thompson, J. G. Wheat growing industry in Wisc. (1909), 292–294
Wheat situation of 1923 U. S. Bureau of Agric. Economics. Rept. to President of U. S. (1924), 321
Wheat Standardization
U. S. Congress. Committee on Agric. (House). Hearings "Grades for spring wheat" during grain standards controversy (1921), 608–610
Wheeler, G. M.
In charge, geographical surveys west of 100th meridian. Rept. (1889), 853
Whitcomb, W. O., (1884–) and E. J. Bell, jr.
Protein test in marketing wheat (1926), 612
White, H. C.
Committee on instruction in agric., 89
White, P. J.
First Tompkins Co. survey, 357
Whitney, M. (1860–1927)
Committee to study organization of statistics, 230
Whitson, A. R.
joint author. See Duffy, W. A., 864
Wholesale Markets
See Marketing Research
Wickens, D. L. (1890–)
Farm mortgage credit (1932), 946–947
Wiest, E.
Agric. organization in U. S. (1923), 977
Wigder, C. F.
Farm mortgage interest rates (1925), 956–957
Wilcox, R. H. (1887–)
Cost accounting conference, 1923, 428–432
, *et al.* Cost and methods of fattening beef catle in the Corn Belt, 1919–1923 (1927), 425
Wilcox, W. W.
and O. G. Lloyd. Human factor in management of Ind. farms (1932), 161
and G. A. Pond. Study of human factor in farm management (1932), 161
, A. Boss and G. A. Pond. Relation of variations in human factor to financial returns in farming (1932), 161–164
Wiley, J. R.
Death and crippled losses in shipping hogs to market (1927), 752
Motor transportation of hogs to Indianapolis market (1930), 752
Willard, R. E. (1883–)
Cost accounting conference, 1923, 428–432
Farm credit survey of four townships of Foster Co., N. D. (1924), 956

Willcox, W. F. (1861–)
Land tenure, size of farms, U. S. census data, 1880, 1890, 43
Willingmyre, G. T. (1882–)
Wool standards, 631, 632
Wilson, A. D.
joint author. See Hays, W. M., 76
Wilson, J. (1835–1920)
Mentioned, 217, 218
Quoted on foreign markets, 514, 516
Secy. of Agric. (1897–1913), 207, 534
Term "Agric. Economics" used, 533
Wilson, M. L. (1885–)
Fairway Farms project (1926), 596
Wilson, T. E.
Conference, 1922, 589
Wilson, Woodrow (1856–1924)
Appointed Houston Secy. of Agric., 230
Mentioned, 534
Wisconsin
Agric. Exp. Sta. Bulletins. *See* Government Studies, U. S. State Level
Special Bulletins. *See as for* Bulletins
Dept. of Agric. Bulletins. *See* Government Studies, U. S. State Level
Dept. of Agric. and Markets. Bulletins. *See as for* Dept. of Agric.
State Agric. Socy. Transactions (1886), 58
State Bd. of Public Affairs, 551, 557, 558
Univ. of Wisc. Aegis; student publication, Nov. 8, 1892 (F. J. Turner), 285
Agric. history stimulated by Univ. of Wisc. R. T. Ely, 1892–1925; W. A. Scott, 1892–1932; F. J. Turner, 1889–1910; and students, 287–315
Bulletins. *See* Educational Facilities
Contributions to marketing problems prior to 1900, 550
Extension work under D. H. Otis, J. S. Donald and S. W. Mendum, 381
Institute for Research in Land Economics, 1920, 848
Leader in early development of land economics; coming of R. T. Ely in 1892, 769
Participation in Lubin's export bounty prize essay proposal, 1894, 16
Retardation of functioning of activities of Univ. by Amer. Society of Equity ended in 1918, 662
School of Economics, Political Science and History opened, 1892/93; R. T. Ely director. *See* Ely, R. T.
Theses. *See* Government Studies, U. S. State Level
Wisconsin, general
Agric. credit. *See* Farm Finance and Agric. Credit
Amer. Society of Equities activities. *See* Amer. Society of Equity
Banks and Banking
Garlock, F. L. Country banking in Wisc. during the depression (1941), 972–974
Butter marketing. *See* Butter Marketing Research
Cheese marketing. *See* Cheese Marketing Research
Cheese producers' federation, 660–661
Cooperative marketing research. *See that title*
County studies
Bayfield Co. Land inventory (1929), 864
Dane Co. Farm profits — figures for the same 60 farms for 1913–1917 (Dixon and Hawthorne). (1920), 368
History of agric. in Dane Co. (Hibbard). (1904), 290–292
Kenosha Co. Four Wisc. counties (Schafer), 1927, 294–297
Lincoln Co. Land use (Hibbard, *et al.*). (1929), 868
Milwaukee Co. Four Wisc. counties (Schafer), 1927, 294–297
Ozaukee Co. Four Wisc. counties (Schafer), 1927, 294–297
Racine Co. Four Wisc. counties (Schafer), 1927, 294–297
Walworth Co. Farm costs and practices (McNall and Ellis). (1928), 411
Dairy farming. *See that title*
Extension work. *See that title*
Farm labor. *See that title*
Farm ownership and tenancy. *See that title*
History of agric. in Wisc.
Schafer, J. History of agric. in Wisc. (1922), 296
State Historical Socy. of Wisc. Domesday Book. General Studies. V. 1–2, 1922, 1927, 294–296
Land economics. *See* Land Economics Research
Livestock. *See* Livestock Farming
Marketing research. *See that title*
Milk marketing. *See* Milk Marketing Research
Potato Growers' Assoc., 555
Potatoes. *See* Potato Marketing Research
Statistical studies
Becker, J. A. Wisc. agric. statistics, 1920 (1921), 252
Taxation. *See* Taxation
Wheat production
Thompson, J. G. Wheat growing industry in Wisc. (1909), 292–294

Woods, A. F.
Director Minn. Agric. Exp. Sta., 1912, 549–550
Woodworth, J. E.
Relation of acreage of major staple crop or crops to acreage of other crops (1917), 234
Wool Industry
Development of wool standards, 1921–1925, reviewed, 631–633
Mumford, H. W. Production and marketing of wool (1900), 547
Peffer, W. A. Production increase urged. *In his* Agric. depression, 1894, 23
Wooten, H. H.
joint author. See Forster, G. W., *et al.*, 1015–1016
Working, E. J. (1900–)
To study price trends, 454
Working, H. (1895–)
Factors influencing price differentials between potato markets (1925), 455
World War I
Hibbard, B. H. Effects of the Great War upon agric. in U. S. and Great Britain (1919), 137–138
Resulting new problems relating to farm land, 848
Worsham, C. G.
Cost accounting conference, 1923, 428
Worthington, C.
Statistician U. S. Dept. of Agric., 1879–1880, 189
Wright, C. D. (1840–1909)
History and growth of U. S. census (1900), 259–262
With Carnegie Inst. of Wash., D. C., 302
Wyoming
Agric. Exp. Sta. Publications. *See* Government Studies, U. S. State Level

Y

Yearbooks of U.S.D.A. for 1921–1925, 317–319
Yoder, F. R., H. S. Beardsley and A. J. Honeycutt
Farm credit in N. C.: survey of 800 farms (1923), 953–954
Young, A. (1741–1820)
Autobiography. M. Betham-Edwards, ed. (1898), 331–332
Correspondence with George Washington, 1786–1794, 330, 340–342
Farmer's tour through the east of England (1771), 328
Marshall, W. and Young contrasted, 331–332
Six months tour through the north of England (1770), 327–328
Six weeks tour through southern counties of England and Wales. 6 vols. (1768) and ed. 2 (1769), 327–329
Young, E. C. (1892–) and O. A. Day
Prices of farm products in Ind. (1928), 500–501, 752
Young, G. E.
joint author. See Lloyd, O. G., 752
Youngblood, B. (1881–)
Possibilities of Brazil as competitor of U. S. in cotton growing (1926), 760
Yount, H. W. and L. P. Jefferson
Economic study of the Mass. apple industry (1926), 727–728

Z

Zimmerman, C. C.
Helped plan study on the human factor, 161
Zon, R. (1874–)
joint author. See Gray, L. C., *et al.*, 852, 863
See Schantz, H. L., 317

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